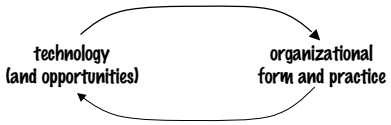
ICS 132: Organizational Information Systems

E-Commerce - II

ecommerce

- this week's lectures are on ecommerce
  - because it's a major "cultural event"
  - because it draws together many of our concerns
    - markets, economics, communication, data
    - the "coevolution" at the center of the class



ecommerce impacts

- technology and practice co-evolve
  - new forms (e.g. ecommerce) arise out of old
  - new technologies provide new opportunities
  - there are some substantive impacts
- think about this material on three levels
  - those that haven't changed at all
    - e.g. markets, costs, speed
  - changes in mechanism but not in practice
    - e.g. payment systems, disintermediation
  - fundamentally new
    - e.g. demand aggregation, mass customization

ecommerce impacts (level 1)

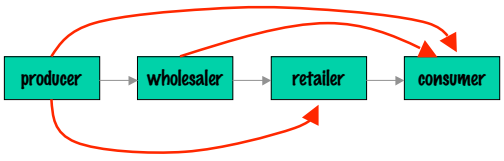
- the context for organizational life
  - the organization's environment changes all the time
    - remember the organism argument
  - much ecommerce is a response to those changes
  - in other words, it's *more of the same*
- efficiency arguments part of first category
  - "things that haven't changed at all"
  - efficiency was always important

ecommerce impacts (level 2)

- the second level
  - changes in mechanism but not in practice
    - things we were doing before, but can now do in new ways
- two examples
  - "disintermediation"
  - payment systems

disintermediation

- "disintermediation"
  - "dis-" + "intermediary" + "-ation"
  - non-technically, cutting out the middleman



payment systems

- a second impact area
- two traditional problems of payment systems
  - establishing value
    - barter, exchange value, etc
      - the difference between barter and monetary systems is that money should have the same value to everyone
        - » paying people in goats only works for people who like goats
  - effecting exchange
    - actually carrying it out
    - what am I going to give you?

fiduciary vs scriptural money

- fiduciary money (fiat money, legal tender)
  - issued by a central (government) bank
  - has real "discharging power" (to discharge debts)
  - cannot be refused
- scriptural money (not legal tender)
  - money not issued by central bank
    - bank accounts, travelers checks, gift certificates, scrips
  - discharging power based on trust in issuer
  - can be refused

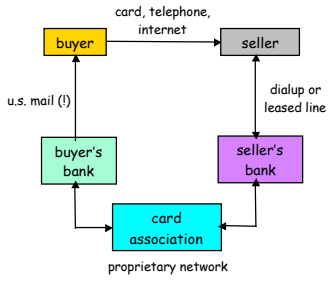
token vs notational money

- token money (value represented by physical article)
  - represented by a physical article
    - e.g. cash, gift certificate, traveler's check
  - can be lost
- notational money (value held in account balance)
  - examples: bank accounts, frequent flyer miles
  - transferred by order
  - requires clearance (determining net effect of multiple orders)
  - requires settlement (payment in fiduciary money)
- hybrid money
  - check, telephone card (carries promise of future service)

credit cards

- most expensive payment mechanism
  - MasterCard: $0.29 + 2% of transaction value
  - a $100 charge costs the merchant $2.29
- currently the most convenient method
- advantage: allows credit
  - people can buy more than they can afford
  - (this is a disadvantage too!)
- disadvantages:
  - doesn't work for small amounts (too expensive)
  - doesn't work for large amounts (too expensive)

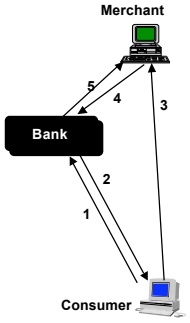
credit card transaction



digital cash

- bit strings as tokens representing value
  - amount, serial #
  - digital signature to protect integrity
- issued by banks
  - similar to 19th century bank notes
- advantages
  - anonymous
- disadvantages
  - can be easily duplicated
  - need to prevent double spending
    - monitor serial numbers

digicash model



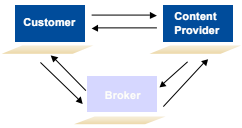
- 1- Consumer asks Bank for Digicash
- 2- Bank sends Digicash bits to consumer
- 3- Consumer sends Digicash to merchant in payment
- 4- Merchant checks that Digicash has not been double spent
- 5- Bank verifies that Digicash is valid
- Advantages
  - Privacy, Scalability
- Disadvantages
  - Complexity
    - Detecting double spending
    - Robustness against failure
  - Accountability

micropayment systems

- the Internet operates on a large scale
  - billions of users
  - billions of pages
- regular payment systems don't scale
  - transaction costs
  - minimum charges
- micropayments allow for tiny charges
  - e.g. paying for page views

millicent

- HP's (compaq's (DEC's)) micropayment system
- vendor-specific currency, called *scrip*
- consumer buys scrip from broker
  - merchant checks for double spending
- transactions:
  - calues down to 0.1 cents
  - cost down to 0.002 cents
- minimize crypto processing



thoughts on micropayments

- once upon a time…
  - micropayments once seemed inevitable
    - early days of the Internet
    - commercialising existing activity (e.g. page views)
  - many competing schemes
- these days
  - some notable advocates (e.g. Neilsen)
  - arguably, actual ecommerce is *macro*-payments
    - large scale items
    - more likely to buy a large-screen TV than a newspaper article!

subscription model

- subscription services
  - like micropayments
    - payment mechanism for repeated small charges
  - unlike micropayments
    - paying for *right* to purchase/view/use
- advantages for merchants
  - predictable income model
  - opportunity to learn about customers
- advantages for customers
  - familiar model (e.g. newspapers, AAA)
  - understand consequences for action

payment system costs

- dispute resolution costs
  - non delivery (Internet is unreliable)
  - processing refunds
- credit risk
  - losses due to overdrawn debit (credit) account vs costs of real time verification
- record keeping costs
  - statements
- communication and processing costs
  - number of messages
  - cryptographic processing
  - privacy protection
- costs of availability
  - realtime versus deferrable communications

ecommerce impacts (level 2)

- payment systems are a level 2 phenomenon
  - a change in mechanism
    - new forms of exchange and notation
    - not just a recoding, but a new set of structures
  - but not in practice
    - the principles of money systems remain the same

ecommerce impacts (level 3)

- level 3 phenomena are fundamental changes
  - new opportunities we couldn't have had before
  - features that depend on the new medium
- two examples
  - mass customisation/personalisation
  - demand aggregation

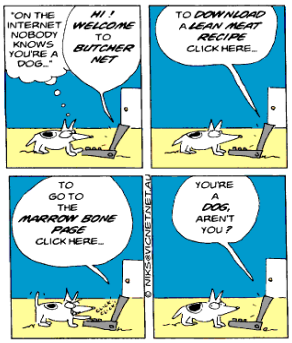
the information aspect

- commercial transactions always informational
  - but now the information is:
    - more pervasive
    - available in real time
    - directly communicated between customer and vendor
- so what can we do?
  - what we can do depends on what we can know
    - target marketing information better
      - depends on knowing who's where
    - create more appealing products
      - adapting to individual tastes
    - lower costs
      - integrating information about multiple people

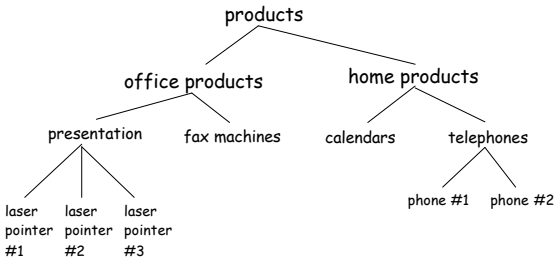
adaptation vs anonymity

"On the Internet, nobody knows you're a dog."

adaptation vs anonymity



within-site tracking



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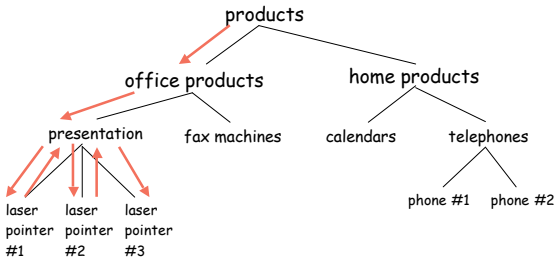

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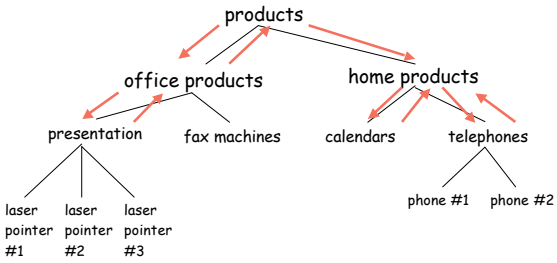

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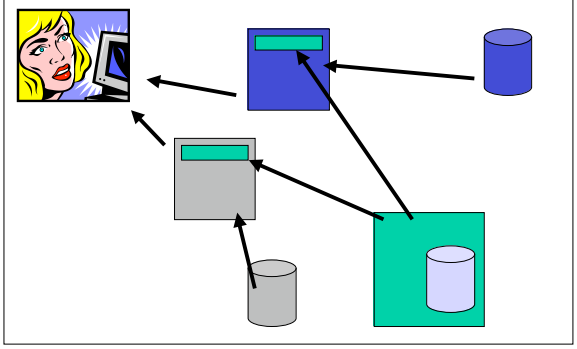

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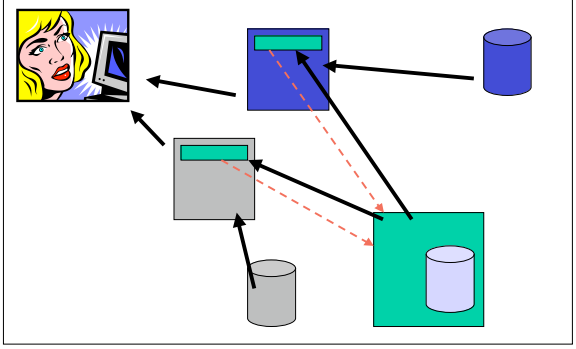

building customer profiles

- customer profiles
  - integrate information from different places
    - where customer has been
    - what they were doing there
- target audience
  - browsing tables at bookstores
  - the amazon.com front page
- personalise experience
  - replace the in-person experience of f2f
  - but now, can do this on a massive scale

personalisation/customisation

- *mass* personalisation
  - in the everyday world
    - there's only one store
    - you have limited information about customers
    - manufacturing and sales are decoupled
  - in the online world
    - everyone's experience can be uniquely tailored
      - indeed, tailored not just to Joe, but to Joe-at-this-moment
    - can integrate sales and manufacturing directly
      - build-to-order
      - personalised profiles

demand aggregation

- the balance between supply and demand
  - supply -- how much of something is available
  - demand -- how much the market wants
- however, this balance isn't quite right
  - suppliers frequently have the upper hand
    - various legislative arrangements exist to counter this
      - there's no monopoly law for customers!
  - a small number of suppliers can affect outcomes for many customers
    - but the inverse generally isn't true

demand aggregation

- traditional commerce aggregates *supply*
  - doesn't make sense to make just one computer
    - first make a number of them, then sell to many people
- ecommerce allows aggregation of *demand*
  - "exercising buying power"
  - buying power comes from putting people together
    - ie aggregating *demand*
    - e.g. Priceline; Mercata
- two domains
  - business-to-consumer
  - business-to-business

demand aggregation

- bargaining power
  - aggregating demand aggregates bargaining power
  - examples
    - school districts buying PCs
  - this is different, though
    - no preexisting or ongoing relationship
    - depends on easy mechanisms of contact and coordination
- it's a question of information economics
  - this was always possible; it was just too hard
  - now it's easier to get the information you need

ecommerce

- two models
  - ecommerce is a radical shift in business
  - ecommerce is just more of the same (online)
- the truth lies somewhere in between
  - factors that remain the same
    - efficiency arguments
  - factors that change in form but not kind
    - disintemediation, payment systems
  - factors that are truly new
    - demand aggregation, mass personalisation