COMP6201 E-Business Strategy
Case Studies

February 2018

Session 1

Direct Insurance Case Study
Direct Line

- In 1984 Peter Wood persuaded RBS* to set up a subsidiary selling insurance by telephone
  - RBS invested £20M into setting up this new venture
- In 1985 Direct Line sold its first policy
  - they had 63 employees in their Croydon office
  - initially just sold car insurance, later home insurance
- In 1988 made first profit, bought out by RBS
- In 1990 TV ads used the red telephone on wheels
- By 1996 the largest private car insurer in the UK

* Royal Bank of Scotland
Direct Line’s Success (1 of 2)

- At the time most insurance was sold via brokers
  - around 38% of costs were broker commission
  - plus 17% relating to claims handling
- Direct Line’s costs were as low as 14.5% in 1992
  - payment only by credit or debit card, not cheques
  - fixed costs including communication and IT
  - variable costs significantly lower than average
  - low claims ratio – carefully selected customers
    - avoided fast and exotic cars, young drivers
  - customer retention around 85% cf ~50% on average

Leading Private Car Insurers (1991)

<table>
<thead>
<tr>
<th>Company</th>
<th>Gross Premium</th>
<th>Market Share %</th>
<th>1000s of vehicles</th>
<th>Average Claims %</th>
<th>Expenses Ratio %</th>
<th>Total%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Norwich Union</td>
<td>£330.1M</td>
<td>8.3</td>
<td>1078</td>
<td>96.3</td>
<td>22.4</td>
<td>118.7</td>
</tr>
<tr>
<td>2. General Accident</td>
<td>£306.8M</td>
<td>7.7</td>
<td>1302</td>
<td>84.3</td>
<td>29.1</td>
<td>113.5</td>
</tr>
<tr>
<td>3. Sun Alliance</td>
<td>£275.4M</td>
<td>6.9</td>
<td>1692</td>
<td>84.4</td>
<td>30.1</td>
<td>114.5</td>
</tr>
<tr>
<td>4. Eagle Star</td>
<td>£258.2M</td>
<td>6.5</td>
<td>925</td>
<td>80.2</td>
<td>28.3</td>
<td>108.5</td>
</tr>
<tr>
<td>5. GRE...</td>
<td>£247.2M</td>
<td>6.2</td>
<td>960</td>
<td>97.6</td>
<td>25.2</td>
<td>122.8</td>
</tr>
<tr>
<td>17. Direct Line</td>
<td>£65.4M</td>
<td>1.6</td>
<td>336</td>
<td>68.4</td>
<td>23.0</td>
<td>91.5</td>
</tr>
</tbody>
</table>
Direct Line’s Success (2 of 2)

- Encourage customers to ring its call centre:
  - the first to open evenings and Saturdays
- Provide friendly, courteous and efficient service
- “Instant” quotations (3 mins for car insurance)
  - cf days via traditional paper based methods
- Claims are made via the 24-hour helpline
- Small claims can be authorised over the phone
- Larger claims assessed by Direct Line engineers
  - and repairs guaranteed if approved repairer used
- Monitor effectiveness of telesales staff
- Monitor effectiveness of advertising channels

Current Situation

- The success of Direct Line forced others to copy
- Peter Wood left to set up Esure & Sheilas Wheels
  - and was knighted in 2016
- Nowadays Direct Line is a separate company
  - they were sold off by RBS in 2012
  - they own brands such as Churchill & Green Flag
  - they have around 10,000 employees
- Like everyone else, they sell over the web
  - directline.com launched in 1999, 100000 sales in 1st year
  - as well as via the phone, mobile phone, brokers, ...
Activity

- Imagine you have created a new business model
  – your running costs are half those of the competition
  – and you are generating healthy profits
- How would you prioritise the following?
  – offer lower prices
  – spend more on advertising
  – build an impressive headquarters
  – invest in expanding the business
  – raise salaries to attract better staff

From original situation (a) to disintermediation (b) and re-intermediation (c)
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 2.8
Financial Services Added Value

- Simple services add value through low prices
  - including transparent and fair disclosure of price
- Complex services add value by
  - image and reputation of provider
  - functional service quality and customer care / support
- Quality of a service includes
  - location and/or ease of access
  - flexibility of offering
  - quality of staff, helpfulness, efficiency
  - reliability and trust

Source: Adding Value in Service Offerings, Devlin, European Journal of Marketing 1998

Perception of UK Financial Services


Set up in 1989 by Midland / HSBC
Customer Experience and Satisfaction
source: From Relationships to Experiences in Retail Financial Services, O’Loughlin, Szmigin & Turnbull, International Journal of Bank Marketing 2004

Activity

• Westerman (Leading Digital, 2014) states that
  – 62% of US banking customers prefer to do their banking on-line, but on the other hand,
  – only 47% believe that a bank can be legitimate if it has no physical branches
• How can an on-line bank create trust without having its own high street buildings / branches?
Session 2

Tesco Supermarket Case Study

History of Supermarkets

• Originally, customers were served by a store assistant who fetched items, weighed them, and put them in bags
  – like a delicatessen today
• Shops knew their customers
  – they were usually happy to deliver goods and run accounts
• The first (US) supermarkets began in 1916, giving
  – customer self-service
  – convenience
  – volumes of scale
• But also
  – higher risk of theft
  – customer anonymity
Tesco Plc

- Lord Jack Cohen
  - 1919 first London market stall
  - 1924 founded Tesco
  - 1931 first supermarket in UK
  - 1963 Green Shield stamps
    - “besieged by 1000s of housewives”
    - but by mid 1970s this was a £20M burden
    - not easy to measure the benefits, only the costs

... continued

- Lord Ian MacLaurin
  - 1977 Operation Checkout
    - use savings to modernise stores and lower prices
    - whole shop sold out on first day in Preston
  - 1993
    - still number 2 behind Sainsbury’s
    - lower cost competitors (Asda, Kwiksave)
    - data mining becoming technically feasible
    - authorised Tesco Clubcard trial
  - 1995 Clubcard launched nationwide
- Sir Terry Leahy was chief executive 1997–2011
Personalised Data

• Clubcard allows Tesco to build up a picture of each customer’s purchase pattern
• Before this they knew how well each item, department, and store was doing
• But could not tailor marketing and promotions to suit their actual customers
  – only their “average” customer
• They would not even know when a once-loyal customer switched to another store

Data Mining

• A new idea at the time
  – now a standard feature of large database systems
• Then you had to “clean” your transactional data
• And transfer it to your “data warehouse”
  – designed for large scale data analysis
• An apocryphal example:
  – nappies and beer tend to be bought together
  – because new fathers are sent out to shop
• Of course, this information is useless without the imagination and desire to serve them better
dunnhumby

- Tesco contracted small consultancy dunnhumby to analyse their Clubcard trial data
- They gave a (Nov 1994) board presentation on
  - response rates
  - customer research results
  - like-for-like sales boost
- MacLaurin commented
  - “what scares me about this is that you know more about my customers in 3 months than I know in 30 years”
- Clubcard to be launched nationally in 12 weeks!

Clubcard Launch

- A news blackout was imposed
  - launch team worked in “bunker”
- Customer hot-line recruited and trained
  - and received up to 2000 calls per day
- Tesco sourced 7 million cards
  - but still ran out in the first fortnight!
- TV launch campaign created in just 1 week
  - “every little helps”, “a big thank you”
- National tour by executives 5 days before launch
- Press release 3 days before launch
  - Sainsbury: “an electronic Green Shield stamp”
Impact of Clubcard

![1995 UK Supermarket Market Share](image)

Tesco market share continued to grow for 10+ years

Important Initial Findings

- From the trials, Tesco had learned that 1% discount was just as effective as 2%  
  – so 1% was the agreed level, limiting risk  
- They calculated 1.6% sales boost would cover the cost of launching and running Clubcard  
  – an initial sales boost of 4% settled down to over 2%  
  – sales picked up even older stores which had been in decline for years  
- Soon, around 70-80% of purchases were made by Clubcard users
Quarterly Mailing

• The proposition is simple & easy to understand
  – when you spend £1, you get one Clubcard point
  – when you have 100 points, Tesco gives you £1
• Vouchers are mailed 4 times per year
  – some are simple discounts, say £3 off £30 shop
  – others target specific and relevant products
• Hundreds of customers ring up in advance of each mailing to check when it will arrive!
• Stores see four extra boosts in sales per year
  – comparable to Christmas or Easter

Data Analysis

• dunnhumby initially just analysed a fraction of the data
  – 1995: first mailing, 12 combinations of messages and offers
  – 1996: 1800 different mailings
  – 1999: 145,000 different mailings
  – 2005: completely personalised (8M different)
• Certain combinations of products suggest customers are likely to buy other products, eg wine, beauty products
  – but perhaps they are buying these elsewhere
  – vouchers for these are included in the mailing
  – the goal being to boost all departments (“shop the shop”)
  – also to avoid sending inappropriate offers (meat to vegetarians)
• Also, mailings have been used to lure back shoppers who seem to have stopped shopping at their Tesco store
Follow On Initiatives

- Tesco Personal Finance
  - a supermarket became a successful bank
- Clubcard deals
  - special promotions via the Clubcard mailing where the cost is borne by the supplier
- Tesco Baby Club, Wine Club, ...
- Tesco.com
  - initially for food and now non-food items
- Licensing & consultancy to the US
  - Tesco.com to Safeway US (£15M per year)
  - dunnhumby to Kroger, another US supermarket

Tesco.com

- Initially Tesco Direct, trialled 1996
  - catalogue distributed on CD-ROM initially
  - later used Clubcard data to simplify ordering
  - technical support from Microsoft
  - became Tesco.com in 2000
- Targeted customers most likely to go on-line
  - using RFV (recency, frequency, value) metrics
  - automated emails encourage purchases and repeat purchases
- First operating profit by 2001
  - 80% of customers were ABC1, and
  - 80% were women
- By 2005 5.5M users per month
  - from 25% to 30% of shoppers are new to Tesco
How to be Number 1 Globally

• This success contrasts other internet grocery attempts
  • WebVan spent $1.2B to acquire 0.75M customers
    – around $1600 per customer
    – cf $250 for typical internet start-ups
    – and Tesco, who only spent ~£20
  • Other supermarkets built special warehouses
  • Tesco.com orders were initially printed out in Dundee and faxed to the store
    – where “personal shoppers” collected orders
    – they now have route-planning software
    – and can complete 6 orders at a time

Success Factors

• Executive commitment
• Speed of execution
• Agility: small team, direct responsibility
• Low budget, low risk
• Outside expertise
• Flexibility
  – to change or fine tune in light of experience
Last Thoughts

• This was not only “first mover advantage”
  – it also required perseverance and imagination to use the opportunity to Tesco’s advantage
• The other major supermarkets also launched their own loyalty cards
  – and initially reached as many customers
  – but their schemes did not prove cost-effective
  – so were later abandoned
  – or merged into the Nectar scheme

Reference

• My source for most of this lecture is Scoring Points, Humby C et al, 2003/7
• See also Digital Business, Chaffey, 2015

Current Situation: Tesco is still market leader, although their market share is falling, and there may have been breaches of accounting practice

Note also: Tesco support mobile purchasing via adverts with Q/R codes to provide “virtual stores” in S. Korea where people tend to shop locally
Session 3

Amazon Case Study
How E-Business Can Add Value

• Lower transaction costs
  – a direct source of competitive advantage, and enable
  – disintermediation, the “sharing” economy
• Availability and reach
  – shop “anytime”, new marketing channels,
  – mobile internet available “anywhere”, …
• Improved quality of service
  – accurate recommendations, business intelligence, …
• New business models
  – long tail, streaming, crowd sourcing, …

Disintermediation of a consumer distribution channel showing (a) the original situation, (b) disintermediation omitting the wholesaler, and (c) disintermediation omitting both wholesaler and retailer

Source: Chaffey, Digital Business and E-Commerce Management, 2016, Figure 2.7
Early Design for Amazon: sketched on a napkin

(Source: Amazon)

Amazon’s Early Technology

• Metric-Based Approach*, A/B experiments
  – Chaffey quotes Bezos (Amazon CEO) in 1997:
  *Amazon has an amazing window into human behaviour; we are not just a store, but an immense repository of facts; we want a metric for customer enjoyment*

• Recommendation/Recommender Systems
  – boosts sales, particularly from the long tail
  – an early example, reported in Wired by Anderson:
    • Success of Into Thin Air (1998/9) boosted sales of the (nearly out of print) Touching the Void (1988)
An on-line store like Amazon can sell less popular (long tail) books which traditional booksellers don’t have space in their shops to stock.
Activity

• Think of items you have bought over the web
  – do you rely on suggestions from your friends,
  – or recommendation algorithms,
  – does the answer depend on the type of item?
• Can you think of a long tail item
  – one you found and/or bought over the web which would not be available in a physical shop?

Recommendation Algorithms

• Content-based, or Item-to-Item
  – identifies similar items (eg often bought together, browsed together, or have similar attributes)
  – eg users who bought X also bought Y
• Collaborative Filtering, or Person-to-Person
  – identifies similar people, then recommends items they have purchased or accessed recently
  – eg people like you have bought Y
• Knowledge-based
  – manually generated information about users & items
• Hybrid: some combination of the above
User-based Collaborative Filtering

- Idea: People who agreed in the past are likely to agree again
- To predict a user’s opinion for an item, use the opinion of similar users
- Similarity between users is decided by looking at their overlap in opinions for jointly rated items, or for similar profile of streamed media
- Known problems include cold-start, sparsity, and scalability

Item-Based Recommendations

- Find pairs of items commonly found together in the shopping basket, or browsing history
  - compute a similarity metric based on frequency
- Calculations can be O(N)
  - pre-compute the similarity matrix (eg overnight)
  - only keep the best 10 matches (say)
- This approach avoids the user cold start problem too, and is less affected by sparsity
Evaluating the Effectiveness

- Amazon has >10,000,000 users, >1000,000 items [1]
- Experiments show item-based methods give comparable or better results cf user-based, and are many times faster [2]
- Research continues to this day
- Note that some methods are patented, so they clearly have commercial value


Metric-Based Approach: Data Trumps Intuition

- Real-time A/B tests are used to decide which content and promotion goes on which page and where on the page, rather than “design by committee”
- Each new design & feature is randomly tested against the baseline for a few days or a week
  - user response is measured using Amazon’s metrics
  - can run multiple simultaneous tests
  - need to distinguish short-term v. long-term effects
- Amazon were unsure about recommendations
  - but experiments showed these were effective
  - according to Rogers (Digital Transformation Playbook 2016)
Research shows each percentage point increase in customer satisfaction results in 2.75 percentage point increase in shareholder value [Anderson 2004]

**Shopping Experience** (source Piper Jaffray 2010)

**Activity**

- In your opinion, which e-commerce site today has the best shopping experience?
- Have you had any bad experiences?
- Did you then abandon your purchase?
Example Metrics

- Amazon.com always looks for simple solutions that provide lower prices
- Their first innovations (1995-2003) supported selection
  - customer reviews, recommendations and bundles
  - look inside the book, search inside the book
- Also 1-click ordering (1997)
  - this increased the conversion rate and sales
- And delivery (2001-2002)
  - where’s my stuff, free super saver shipping
- Two thirds of purchases are from returning customers
- Some items were found to be non-profitable
  - a $25 folding chair that takes 15 minutes to package and ship
  - these are now shipped by the manufacturer, not Amazon

See http://www.slideshare.net/faberNovel/amazoncom-the-hidden-empire/
Last.fm: a local success

- Last.fm is an on-line music service
  - founded in 2002, offering radio streaming
  - uses the audioscrobbler recommender system
    - which was based on a UoS undergraduate project
  - last.fm was sold in 2007 to CBS for £140M
  - so the founders are now very rich 😊

Session 4

E-Marketing Case Study
Definitions

• According to the OED, marketing is
  • bringing or sending a product or commodity to market; promoting and selling a product, etc., including market research, advertising, distribution

• The Chartered Institute of Marketing state that
  • marketing is the management process responsible for identifying, anticipating and satisfying customer requirements profitably

• So e-marketing is doing the above by electronic media, especially the internet

Marketing On-Line

• Traditional marketing can be poorly targeted
  • TV or newspaper advertising, junk mail
  • banner advertising and spam repeat this over the Net
  • ads and articles in specialist publications can be better

• The web can bring the right consumers, and just the right consumers, to your site
  • via Google searches/adWords
    • provided your site is well ranked and relevant
    • and you can benefit from the long tail effect
      • reaching previously under-served audiences
Figure 1.8
Digital and offline communications techniques
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Figure 1.8

Content Marketing Matrix
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 8.6, adapted from Smart Insights (2012)
The New Rules of Marketing and PR*

- Marketing is more than just advertising
- You are what you publish
- People want authenticity, not spin
- People want participation, not propaganda
- Instead of causing one-way interruption, marketing is about delivering content at just the precise moment your audience needs it
- Blogs, podcasts, ... communicate with buyers in a form they appreciate ...

... continued

- Companies must drive people into the purchasing process with great online content
- PR is for more than just a mainstream media audience
- The Internet has made public relations public again, after years of ... focus on media
- On the web, the lines between marketing and PR have blurred

* by DM Scott, Wiley 2007/9
Actionable Web Analytics*

- Shift to a culture of analysis
  - become a data-driven organisation
  - avoid common stumbling points
  - consider an analytics intervention (small win)
- Define site goals, KPIs, and other metrics
- Monetize site behaviours
- Gather the right data, analyse site performance
- Move from analysis to site optimisation
  - prioritise goals, outsource and/or tune your web team

* By Burby & Atchinson, Sybex 2007

The operational and management processes of digital marketing

Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 8.1, adapted from E-consultancy (2008)
Activity

- These days, two companies dominate e-marketing
- What are these two companies?
- How did they achieve dominance?

History of Google

1996: Brin and Page develop PageRank
1997: Google.com is registered
1998: $100,000 investment, Google is incorporated
1999: $25M of investment capital is raised, begin keyword advertising
2000: Yahoo sign up Google as their search engine
2001: PageRank algorithm is patented, Eric Schmidt joins as CEO
2002: AOL signs up Google as its US search engine
2004: Google license Overture patents from Yahoo for 2.7M shares ($37M)
       IPO values Google at $23B, AOL signs up Google as its EU search engine
       Google acquires Keyhole which becomes Google Earth
2005: Google purchase Android
2006: Google purchases YouTube ($1.7B)
2007: Google purchases DoubleClick ($3.1B)
2008: Android and Chrome are released as open source
2013: Google has scanned 30M books, litigation continues
2013: Announced new London office, 4500 employees, to open 2016
2014: Sell Motorola Mobile (purchased in 2011) to Lenovo
       Acquire DeepMind Technologies
2015: Google becomes a subsidiary of Alphabet, its new parent company
Google’s Business (source Google)

- Around 90% of Google’s profits come from advertising (according to the 2015 annual report)
  - “it is best to do one thing really, really well”
  - web sites (AdWords, YouTube) c.70%
  - network (incl. DoubleClick ad serving) c.20%
- Supported by free tools such as
  - Analytics, Website Optimizer, Ad Planner
- Other revenue via sale of apps and media via Google Play, Google branded hardware, cloud & API services, licensing
- Alphabet’s other subsidiaries are mainly speculative
  - including Waymo, self-driving cars
  - not yet profitable, and may never be
Google’s Technology (source Google)

- Famous 20% employee “innovation time off”
- Many initiatives are free (or freemium)
  - Google maps, scholar, translate, calendar, mail, ...
  - pulling in more searches boosts ad revenues
- They may have the world’s largest data centres
  - currently 6 in the US, 4 in Europe, and 2 in Asia
  - 1M servers (2011) with proprietary technologies
    - own file system, database, languages, parallel libraries
- PageRank continues to be refined
  - to avoid search engine optimisation “cheats”
  - hypertext matching analysis increases relevance

Social Networking

- Some social networking sites have made it big
  - in the west: Facebook, Twitter
- Others have lost out
  - Napster (legal problems), MySpace
- Profitability and sustainability are concerns
  - Facebook is now very profitable
    - mainly from mobile ads
    - they were founded in 2004
    - rapid expansion led to IPO in 2012
    - now 15 in the Interbrand rankings
  - others (eg Groupon) struggle
The Like Economy*

- Facebook advertising is cheaper & may be more effective
  - a larger user base, growing more quickly than eg Twitter
- You can target your business pages* or groups demographically
  - Facebook knows more about individual users
  - a stream of relevant posts for those who “like” you
- Facebook reaches potential customers at the start of their journey, not just when they commit
  - a new car or house is not an impulse purchase
  - even if the final contact comes via a Google search
- Penguin used teenage bloggers & editors to reach a teenage audience
  - according to Chaffey (6th edition, page 329)

* Brian Carter, Que 2013
# a business should not set up nor advertise via a personal profile

An example of effectiveness measures for an online ad campaign
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 9.8
easyJet Case Study (Chaffey 6/e p347)

- Despite early doubts, easyJet adopted e-marketing
  - by 1999, 38% of sales came via the web
  - by 2013, 98% of sales, these are discounted by £7.50p
  - originally all tickets were sold directly over the phone
    - so it was a little easier for them to switch to e-commerce

- The company website is a PR tool
  - eg publicise “battles” against rivals BA/Go and Swissair

- The company URL is painted on its jets
  - sales promotions (of unsold seats) via eg newspapers
  - which are directed to a micro-site (eg www.times.easyjet.com)

- They are currently aiming to expand use of mobile app
  - by 2013 this has 4.3M downloads, generates 5% of sales
Activity

- When planning an on-line advertising campaign, you need valid estimates of click-through and conversion rates
- How can you obtain such estimates?
Session 5

Customer Relationship Management (CRM / eCRM) Case Study

What is CRM?

• Salesforce automation (SFA): sales reps record customer contacts, interactions and / or sales
• Customer service management: call centre staff use customer / product / service databases to respond to customer queries
• Sales management: e-commerce and SFA systems record sales
• Campaign management: tracking a set of related on-line, email, and off-line advertisement
• Analysis: use of data mining to measure customer behaviour and the effectiveness of ads & campaigns
  • conversion rates & costs, customer segmentation, ...
Benefits of eCRM

• Targeting more cost effectively
  • direct paper mail can result in < 1% response rate
• Mass customisation of marketing messages
  • customise by customer segment, or personalise
• Increase depth and breadth of relationship
• Learn about customer behaviour
  • collect data through the life-cycle
  • this requires customers to be uniquely identified
• Providing scripts to call centre operators*
  • can boost their effectiveness, consistency, regulatory compliance
• Reduce overall cost#
  • information is provided as needed, not at random

# https://www.callcentrehelper.com/how-can-these-technologies-reduce-costs-in-the-contact-centre-100151.htm

The four classic marketing activities of customer relationship management
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 9.1
Customer Extension Activities

• Re-sell: sell similar products to existing customers
• Cross-sell: sell additional products related to the original purchase
• Up-sell: replace original purchase with a more expensive one
• Reactivation: encourage inactive customers to purchase again
• Referrals: generate sales to new customers recommended by existing customers

Segmentation

• To customise messages, you need to distinguish different types of customers
  • for example using their demographics
    • age, gender, location, income, marital status, ...
  • or using their interaction history
    • browsing, phone calls, purchases, ...
• Important metrics to optimise are
  • the customer life-time value (LTV), and
  • the proportion recommending or promoting your business (net promoter score, NPS)
• Businesses often recognise top customers with stars or colours based on such metrics
Customer life cycle segmentation
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 9.21

Activity segmentation of a site requiring registration
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 9.17
An example of an LTV-based segmentation plan
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 9.19

The Purpose of Segmentation

• The purpose of segmentation is to support customisation
  • different types of customer respond in different ways
  • messages need to be targeted accordingly

• Customers can be at different stages
  • business customers may be more advanced
  • they may make an easier sales prospects at present
  • but other customers may be worth at a later date

• eCRM can help to prioritise and meet KPIs
  • now and in the future
Customer demand analysis for the car market
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 8.10

CRM Survey*

- A survey estimates overall effectiveness
  - Attraction
    - visitor acquisition cost: 0.74%
    - visitor growth: 3.09%
  - Conversion
    - customer conversation rate: 0.84%
    - revenue per customer: 2.32%
  - Retention
    - cost of repeat customer: 0.69%
    - revenue of repeat customer: 5.78%
    - repeat customer churn rate: 6.65%
    - repeat customer conversion rate: 9.49%
- So established businesses should focus on customer retention

* Agrawal et al, E-Performance, McKinsey Quarterly 2001
Assessing the Quality of Service

- CRM systems must provide
  - ease of use and graphical appeal
    - including speed of download, frequency of update
  - reliability
    - contact addresses which are visible and work
  - responsiveness
    - replies to email campaigns must get a response
  - assurance
    - personalised response answering the query
  - empathy
    - the “human” touch
Mini Case Study 1  (Chaffey 6/e p432)

• A direct sales organisation
  • Toptable: on-line restaurant booking and advice
• Segmented users into
  • defectors: who last purchased 6 weeks ago
  • looker: who searched a month ago but did not book
• Targeted emailed, one week apart, better deal
  • experiment with eg subject line, content, frequency
  • partnered with Emailcenter to identify, re-activate and re-send to emails where there was a delivery issue
• Emails were found to be 17 times more effective
  • compared to the original newsletter
  • a good return on investment

Mini Case Study 2  (Chaffey 6/e p447)

• Barclays bank introduced web self-service in 2005
  • to reduce the 100K calls per month to its call centre
• In the first 12 months, 350K customer used this
  • increasing to 2M customers by 2007
  • satisfying 92% of customers directly
• The service also provided valuable insights into customer concerns
  • these helped to guide new website content
  • and also a useful place for targeted adverts
    • which were found to have a 12% conversion rate
Activity

• Making reasonable assumptions about costs
  • estimate the return on investment in case study 1
• And likewise for case study 2

• Alternatively, if you find this difficult
  • what extra information do you need?
  • where could you find this, or
  • how can you estimate it?
Sales Force Automation in Practice

• By 1996, 60% of SFA projects failed to deliver
  • evidence of effectiveness is somewhat mixed
    • costs of $5-15k per sales person may not be recovered
    • better access to information is a common benefit
    • also more efficient, faster, improved service, but
    • lengthy training time & implementation issues were also common, and
    • half the studied organisations did not define or evaluate success
  • automation may undermine autonomy, and does not fit the role
    well as selling relies on human contact
    • sales people may not be comfortable / proficient laptop users
  • in some case studies, staff turnover increased
    • together with absenteeism, job commitment & satisfaction

Speier & Venkatesh, Hidden Minefields, Journal of Marketing 2002

Session 6

IT Cost Reduction Case Study
Cost Management versus Cost Reduction

• Any business needs to manage its costs
  • this means making sure the costs are reasonable and appropriate
• Cost reduction may be required at some stages
  • for example, when the business is starting to shrink
  • or if there is a sudden change in eg currency exchange rate, tax, ...
• Usually this involves reducing staff numbers, delaying expenditure, ...
  • but new technology may create an opportunity to reduce IT costs
  • and if the reduction is large enough, the saving may be strategic
  • for example if it could double profit, or return a business to profit
• Of course, there is a limit to cost reduction, unlike growth

Activity

• Consider a business with an income of £10M
• To double profit, by what amount (in cash terms) do you have to reduce costs if the current profit is 1%
• And what amount is needed if the current profit is 20%
  • calculate the percentage reduction in costs in this scenario
Thin Client Computing

• A few years ago, desktop PCs were expensive
  • $1000 or more
• It was attractive for two users to share one PC
• Desktop or client Windows is multi-tasking, but only single user (unlike Windows server)
• So first Citrix & then Microsoft developed systems for running Windows applications remotely
  • Citrix WinFrame, Microsoft remote desktop client
  • similar to graphics terminals eg X windows clients

Recent Developments

• Chromebook is a laptop running ChromeOS
  • first sold by Acer and Samsung in 2011
    • also now made by Asus, Google, HP, Lenovo, ...
  • note that the Netbook was first proposed in 2007
• popular in low budget situations such as schools
  • unlike tablets, Chromebooks have a physical keyboard
  • around 4M bought in 2013, ~1% of all PC sales
  • can be as cheap as $200, best selling on Amazon Xmas 2015
• If you have a web browser you can run web apps
  • Google Docs instead of Microsoft Word
  • Codio instead of Visual Studio or Eclipse
Server Virtualisation and Consolidation

• The proliferation of web applications led to a proliferation of web servers, so server virtualisation has become popular

• Virtual computing goes back to IBM’s VM/CMS (1972) and z/VM
  • first released in 1972, now z/VM
  • also used in Windows to support earlier OS versions (eg 16/32 bit Windows)
  • an efficient way to host multiple OS’s on one computer

• Unlike an emulator, a VM runs most instructions natively
  • privileged instructions such as I/O are trapped and interpreted
  • the VM is nearly as fast as native execution, 10% overhead or less

• Consolidating servers saves money and other costs
  • power, air-conditioning, rent/buildings and other infrastructure
  • the University, for example, has built a [data centre at Fareham](#)
Cloud Computing

• Building a data centre involves significant up-front investment
  • cost savings will only happen after a number of years
• To reduce costs more quickly, consider cloud computing
  • instead of building / buying the infrastructure, use someone else’s
  • note pay as you go is not the same as renting
• Various themes can be identified
  • remote storage (in the cloud): storage as a service
  • remote processing (in the cloud): h/w as a service, platform as a service
  • hosted applications (in the cloud): s/w as a service
    • a hosted application is not the same as a hosted component or web service

Cost Reduction using the Cloud

• You can rent servers by the hour from Amazon, Google, and others
• Many businesses use their servers at only 10-20% of capacity
  • they have to cope with peak demand
• Depending on the usage pattern, cloud computing may be cheaper
  • in this calculation depreciate server costs over a three year period, say
• There are other costs, eg data transmission
  • so you are advised to study the charging formula carefully
  • and consider how the demands may change over time, eg if usage grows

A View of Cloud Computing, Ambrust et al, CACM 2010
Cloud Computing - the business perspective, Marston et al, Decision Support Systems 2011
Activity

• Your business uses one hundred standard CPU hours each month
  • except in December when thirteen hundred CPU hours are used
• A server whose peak load is one standard CPU costs £450K up front
• A cloud computing supplier charges £50 per CPU hour

1. Which of these is cheaper over a three year period?
   • assuming you depreciate (amortise) the server cost over 3 years
2. Does the answer change if the depreciation period is 5 years?
3. When is it best to adopt cloud computing, and why?
Hosted Applications

• The internet has made it possible to offer first search, then email, & now other applications
  • alta vista, google, hotmail, google docs, ...
• Web 2.0 technologies support rich internet applications via CSS, Ajax, Flash, ...
• traditional office applications are now commodities
  • word processing, spreadsheets, presentations
  • benefits of shared editing outweigh limitations?
• So an opportunity exists for hosted business apps
  • but remember Jack Schofield’s first law: never put data into a program unless you can see exactly how to get it out

Salesforce.com

• On-line Customer Relationship Management, founded Mark Benioff in 1999
  • overtook SAP as #1 in 2012/3
  • by 2016 had a market capitalisation of $55B
• The first modern hosted business application:
  • also described as “the End of Software”
  • 100% customer satisfaction* cf 64% for Siebel
  • in 2015 Salesforce claimed 40% productivity boost, 40% decrease in costs
  • Gartner has estimated 10% lower 5 year TCO (total cost of operations)
• Other CRM vendors have also introduced hosted versions of their applications
  • and hosting is becoming common for other types of business application

* [Info-tech Research Group]
Salesforce.com Strategy

- New features and functions
  - some of which require additional fees
  - thereby increasing revenue per customer
- New and high-growth areas
  - marketing and cloud platforms
  - social media and mobile cloud innovations
  - encouraging development of third party apps
- New customers and top global markets
  - also reducing attrition / extending contracts
CRM Literature

• Many white papers and books can be found on-line

• Well-cited academic papers on CRM include
    • commitment & loyalty programmes boost customer retention
    • using CRM to maintain customers has positive economic benefits
  • A Strategic Framework for Customer Relationship Management, Payne & Frow, Journal of Marketing, 2005
    • proposal for a conceptual CRM framework based on the literature

Business Cases

• In all these cases, the main benefit is cost saving
  • most suitable for a mature or struggling organisation

• Secondary benefits include
  • environmental impact (reduced power usage)
  • further cost savings (reduced infrastructure)
  • improved security (more centralised data)
  • improved license management

• Should be low risk as the technology is now mature

• Manufacturers have published case studies with data on savings
  • Vmware’s Mechanics Bank case study had a return of 600% over 5 years
  • IBM reports costs savings from 44% to 53% for server consolidation
  • but try to find independent sources for more balanced opinions
Session 7

eProcurement Case Study

Definition of e-Procurement

• The combined use of information and communication technology through electronic means to enhance external and internal purchasing and supply management processes.

  *Chartered Institute of Purchasing and Supply (CIPS)*

• Goals are to source items
  • at the right price
  • delivered at the right time
  • of the right quality
  • and the right quantity
  • from the right source
From Paper to Web Based Processing

- Traditional procurement relies on paper-based processes
- Cumbersome forms, approval by signature, delays at each step
- Email automation reduces some of the inefficiency
- But a web-based application offers greater efficiencies
  - consider the two processes defined in the next two slides
  - a typical costing for the paper process is £60 per order
  - by contrast, the web-based process costs around £10 per order
  - this saving is particularly important for firms with large numbers of relatively small orders
- Chaffey reports a survey of 908 businesses, averaging 5000 orders / month
  - in 2012 only 15% sent out the majority of invoices electronically (cf 9% in 2011)
Process flow analysis for traditional procurement (typical cycle time, 5\(\frac{1}{2}\) days)
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Table 7.1

<table>
<thead>
<tr>
<th>Task description</th>
<th>Chart symbols</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Search for goods</td>
<td>○⇒□□▼</td>
<td>1 hour</td>
</tr>
<tr>
<td>2 Fill in paper requisition</td>
<td>○⇒□□▼</td>
<td>10 min</td>
</tr>
<tr>
<td>3 Send to buyer</td>
<td>○⇒□□▼</td>
<td>1 day</td>
</tr>
<tr>
<td>4 In buyer’s in-tray</td>
<td>○⇒□</td>
<td>½ day</td>
</tr>
<tr>
<td>5 Buyer enters order number</td>
<td>○⇒□□▼</td>
<td>10 min</td>
</tr>
<tr>
<td>6 Buyer authorizes order</td>
<td>○⇒□□▼</td>
<td>10 min</td>
</tr>
<tr>
<td>7 Buyer prints order</td>
<td>○⇒□□▼</td>
<td>10 min</td>
</tr>
<tr>
<td>8 Order copies to supplier and goods-in</td>
<td>○⇒□□▼</td>
<td>1 day</td>
</tr>
<tr>
<td>9 Delivery from supplier</td>
<td>○⇒□□▼</td>
<td>1 day</td>
</tr>
<tr>
<td>10 Order copy to accounts</td>
<td>○⇒□□▼</td>
<td>1 day</td>
</tr>
<tr>
<td>11 Three-way invoice match</td>
<td>○⇒□□▼</td>
<td>1 day</td>
</tr>
<tr>
<td>12 Cheque payment</td>
<td>○⇒□□▼</td>
<td>10 min</td>
</tr>
</tbody>
</table>

Process flow analysis for new procurement (typical cycle time, 1\(\frac{1}{2}\) days)
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Table 7.2

<table>
<thead>
<tr>
<th>Chart symbols</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Search for goods</td>
<td>○⇒□□▼</td>
</tr>
<tr>
<td>2 Order on web</td>
<td>○⇒□□▼</td>
</tr>
<tr>
<td>3 Delivery from supplier</td>
<td>○⇒□□▼</td>
</tr>
<tr>
<td>4 Generate invoice</td>
<td>○⇒□□▼</td>
</tr>
<tr>
<td>5 Cheque payment</td>
<td>○⇒□□▼</td>
</tr>
</tbody>
</table>

Key to flow process chart symbols:
○ Process
⇒ Transport
□ Inspection
▼ Delay
▼ Inbound goods
Additional Benefits

- Can add purchasing expenditure to project manager budgets
  - instantly rather than weeks or sometime months later
  - so they can meet their budget target more accurately
    - or highlight likely cost over-runs earlier
- Can expose and reduce “maverick purchasing”
  - ensure company policy and processes are followed
- Maybe can use reverse auction to lower purchasing prices
- The likely scale of these benefits varies by sector
  - in consumer electronics, procurement costs can be as high as 60-70%
  - in service industries, 10-40% is more likely

Cambridge Consultants

- These are a manufacturer offering technology product design & development services to commerce & industry
  - they work on 100s of projects at any one time
- Supplier database has 4000 entries
  - some are very specialised, only one or two purchases per year
  - 400 preferred supplies, 40 are rated as “key supplier”
    - including RS Components
- Cambridge Consultants automated RS purchases
  - most of these are smaller, average of £34 per order
  - some are made after 6pm, when the finance team go home
  - total savings £57K per year, from just this one supplier
Activity

• Company X issues 20,000 purchase orders per year
• The average order value is £150
• Estimate how much using eProcurement can save
• Their total revenue is £10M, of which profit is 10%
• What increase in profit, as a percentage of profit, can eProcurement achieve?

B2B Marketplaces

• An early suggestion was B2B marketplaces for eProcurement
• Many were created but most have subsequently closed
• Procurement professionals need to trust their suppliers
• Suppliers were worried about a “race to the bottom”
  • efficient auctions would undermine their profits
• A significant failure was Cosivint
  • started by Ford, GM, DaimlerChrysler, but market cap is in steady decline
• A successful example is Alibaba
• Some areas of eBay also act, in effect, as B2B marketplaces
Alibaba and eBay

• Founded in 1999 by Jack Ma
  • to connect Chinese manufacturers with overseas buyers
  • also provides C2C (Taobao) and B2C services, Alipay, cloud computing
  • Gold Supplier status recognised trusted sellers
  • the largest retailer in the world, bigger than Amazon & eBay combined
  • market capitalisation exceeds $250B (Feb 2017)

• eBay are currently seeking to expand their B2B volume
  • introduced Business Supply in 2016, combining their previous offerings
  • offers new, refurbished, used, and long-tail items
  • dedicated account management team reduce risk and enhance trust
  • Express financing option increases the potential marketplace
Activity

• Given that so many other B2B market places failed, why have these two succeeded?
  • is this just random, or are there common factors?

Session 8

SAP and ERP Case Study
History of SAP

• Founded in 1972 by 5 ex-IBM engineers
  – their first customer was ICI (chemicals)
  – they went public in 1988 (SAP GMBH → SAP AG)
• Pioneered ERP software
  – before the term was invented by Gartner in 1990
  – SAP Business Suite: ECC, CRM, PLM, SCM, SRM
• The largest software company in Europe
  – and is jointly listed in the US
  – 2010-15 grew revenue 12% per year, profit 10% per year
• Labs in Germany, India, USA, Canada, Brazil, China, ...

Recent Events

• Still the clear ERP market leader
  – 24% market share, double Oracle’s (Gartner 2013)
  – SAP skills are popular and well rewarded
    • eg SAP analyst/consultant/manager/architect £50/60/70/80K
• Hit by cut in enterprise IT spending after 2008
  – controversial proposal to increase maintenance fee
  – had to lay off 3000+ staff instead (around 6%)
  – but now has recovered with over 66,500 staff
• SAP HANA in-memory database platform
  – introduced in 2010, now worth €0.6B annually
• Customer base is large, loyal and growing
  – around 335,000 companies use software from SAP
About ERP

- Originally called MRP (Manufacturing Resource Planning)
  - but now adopted outside manufacturing firms
  - often when switching from mainframe to Unix systems (and Y2K)
- ERP integrates Finance, Logistics, Manufacturing, Analysis, Planning, and Human Resources, and is often extended with
  - SCM: Electronic Order, Tracking, and Payments, JIT deliveries
  - CRM: Sales, Marketing, and Customer Service
  - SRM: Supplier Relationship Management, contracts, discounts, loyalty
- Implementation is typically modular
  - a core system (such as SAP’s ERP Central Component, ECC)
  - plus a selection of other available modules
- Supplemented with industry specific code
  - which you can enhance and configure yourself
  - although this can cause problems with later releases & updates
ERP Rationale

- The compelling reasons for using ERP are
  - coordination of multiple departments
  - improved efficiency and effectiveness
  - customer orders, stock control, component orders, invoicing, deliveries, lorry routing
- Manufacturers from Henry Ford onwards
  - understand the importance of this coordination
  - IT only helps when accounting, stock control, ordering, manufacturing, logistics ... are integrated

A typical IS infrastructure for supply chain management
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 6.14
Members of the value network of an organisation
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 6.9, adapted from Deise et al (2000)

**ERP Benefits**

- **SAP offer customer success stories**
  - typically from manufacturers like VW, Volvo, Heinz
- **And assistance in making a business case**
  - road maps, and typical productivity statistics
    - order cycle time reduced from 5 to 1 day
    - service level increased from 89 to 98%
    - inventory level reduction up to 46%, and so on
- **Success stories can be found on the web**
  - eg Vestas Wind (real time data, finished in 3 months)
  - eg Volvo Construction (employee productivity ×4)
Activity

• What does HANA stand for?
• Look up some of these case studies
  – are they credible?
  – would you recommend SAP adoption?
• Consider a large organisation (eg UoS)
  – is it better to integrate systems yourself?
  – or buy an integration suite like SAP?

Choosing an ERP Supplier*

• By market share: SAP, Oracle, Sage, Infor, M/S, ...
• SAP have
  – “deepest functionality available”
  – “integrated industry centricity” in 25 areas
  – “solid modern middleware base”
  – but only around 1000 partners, few stand-alone applications to offer, and limited support for SaaS#

* IT Business Edge, ERP Supplier Comparison, 2009
# Although ERP C 6 is claimed to be service-oriented
SAP Road Maps

- SAP recommend package combinations eg
  - for Human Capital Management:
    • Talent Management, Workforce Process Management, Workforce Deployment, and Travel Management
  - for Product Development & Collaboration:
    • Product Development, Product Data Management, Product Intelligence, Product Compliance, Document Management, and Tool & Workgroup Integration
  - and so on
- These combinations help new customers to navigate the SAP site, & make a business case

The ERP Controversy

- Implementations can take 3–5 years, requiring specialist contractors, typically disruptive
  - particularly if also changing platform
- The business typically adapt to ERP process definitions
  - adapting the ERP system must be repeated with each new release
  - so there may be a loss of competitive advantage
- In the 1990s, many companies implemented ERP systems
  - often with no clear business objectives
  - perhaps just to replace legacy systems prior to Y2K
  - most, perhaps 90%, got no measurable return
  - a few (eg FoxMeyer) went bankrupt or lost huge sums (eg Hershey)
- And yet, many companies have stuck with their ERP systems
  - SAP has high customer loyalty, over 25 different industries supported
Fox Meyer Bankruptcy (1996)

- Fox Meyer were a large US drug wholesaler
  - $5B turnover, 0.5M items per day from 25 centres
- In 1993, project Delta III began using SAP R/3 with Andersen Consulting responsible for integration and implementation, but
  - warehouse workers obstructed the project
    - as their jobs were threatened by increased automation
  - volume of transactions exceeded R/3 maximum
    - at the time, SAP was mainly used by manufacturers
- consultants had a high turnover & low experience
- Poor project management, or an ERP failure?

Academic & Industry Sources

- Many academic and industry articles
  - because ERP is such big business, & so mature
  - and the ERP controversy has been much studied
- Some (well-cited) examples include
  - Enterprise resource planning: an integrative review, Shehab et al, BPM Journal, 2004
    - these cover implementation & other issues in major ERP projects
  - Is ERP a Universal Solution, Soh et al, CACM 2000
    - problems implementing (western) ERP systems in Asia
  - also see blog entries on erp.com
ERP Success Factors*

- Sustained management support (10)
- Effective organisational change management (7)
- Good project scope management (6)
- Dedicated staff and consultants (6)
- Strong internal & external communication (6)
- Formalised project plan (6)
- Adequate team project compensation (5)
- Adequate training programme (5)
- Thorough business process reengineering (5)

* [Esteves-Sousa & Pastor-Collado, Business Information Technology, 2000]

Acquisitions

- SAP has also expanded by acquiring other firms
  - Wikipedia lists 62, the largest around $8.3B
  - 35 acquisitions from 2001 – 2010
- Some add industry-specific features/expertise
  - travel management, insurance solutions, sports promotion, talent management, health & safety
- Others provide additional base level functions
  - predictive analytics, inventory optimisation, 3-D visualisation, mobile/security software, business rules
Activity

• Company growth can be organic
  – new customers via marketing, word of mouth, ...
• Or it can be via acquisition
  – buying up competitors, and other companies
• What are the advantages of each approach?

Session 9

eBay Case Study
E-Commerce Definitions

- The Oxford English Dictionary defines
  - **E-commerce** as
    - commercial activity conducted via electronic media, esp. on the Internet; the sector of the economy engaged in such activity
  - **Commerce** as
    - trading; exchange of merchandise; related transactions
- **B2C** describes e-commerce activities in which a business sells to a consumer (customer)
  - similarly B2B, and C2C

The Internet Bubble

- The NASDAQ composite index [wikipedia] clearly shows the internet boom and bust
  - from 1000 in July 1995, up to 5132 in March 2000 and back down to 1108 by October 2002
Dot.Con?

- The boom kicked off with Netscape’s IPO in 1995
- John Cassidy claims that investment advisers over-hyped new internet shares (Dot.Con, 2002)
  - other factors included relaxed US monetary policy
  - and day traders buying shares over the web
- Stock market crashes are not new, however
  - Jelassi and Enders (2008) list 4 others: industrial revolution (1797), steam & railways (1847), steel & electricity (1893), oil & automobiles (1929)
  - but this one was much quicker (5 years cf ~20)
  - partly because of day trading over the internet

Survivors of the Bubble

- Ten years later, only three of the largest Internet companies survived intact
  - see graph to the right
  - [Internet stocks still well below their bubble-era highs, Marketwatch, March 2010]
- Amazon continues to grow
  - 10 fold since the bubble burst
  - see graph below [Yahoo Finance]
Activity

• Use Yahoo Finance to similar to plot eBay’s market capitalisation
  – compare the graph with that for Amazon
  – explain any significant differences you see
• Note that Yahoo is currently being purchased by Verizon (?), so no share data is visible

eBay History

1995: founded as AuctionWeb by Pierre Omidyar
1996: introduced feedback forum and star ratings
1997: the site (now eBay) hosted 2M auctions; introduced PowerSellers
1998: Meg Whitman joined as president & CEO; IPO values eBay at $2+B
1999: purchased Butterfield & Butterfield ($260M)
2000: purchased Half.com ($318M), introduced “buy it now”
2002: purchased PayPal ($1.5B), abandoned their own Billpoint system
2005: introduced new categories for business/industrial goods
2005: purchased Skype ($2.6B) voice over IP phone company
2007: introduced Detailed Seller Ratings (DSR) system
2008: purchased Bill Me Later ($1.2B) e-commerce payment system
2009: introduced eBay Top Rated Seller (ETRS) status
2011: sold Skype to Microsoft for $8.5B
2015: split into eBay and Paypal, each with its own shares
eBay Values [The Power of Many, Whitman 2010]

Business executives are trained to ask

• what is the competitive situation
• what is my strategic advantage
• what are my competitor’s weaknesses
• am I moving along this path at sufficient speed
• do I need a better, bigger, more visible position
• how can I prune distractions to focus better
• how can I scale myself and avoid failure

Other questions and values are important for success

• what is the right thing to do here
• trust that people are basically good
• be authentic - you can’t buy integrity
• be frugal - conserve resources
• listen - everyone has something to contribute
• empower and validate - teamwork works
• be brave - most things worth doing are hard

eBay Collectibles

• Whitman saw that collectors valued eBay
  – to buy and sell items rarely available in shops
  – an example of the long tail in action
• eBay organised conventions for top sellers
  – sellers and buyers could meet and discuss
  – share their specialist interests
  – building a community, not just a web site
• Some were recruited to eBay support teams
  – in the beginning, creating auctions was daunting
• These eBay event still continue, although
  – nowadays they are aimed at business sellers
Early eBay Auction Analysis

- Good feedback ratings increase auction prices
  - 1% more +ve ratings  → 0.03% higher price
  - 1% more –ve ratings  → 0.11% lower price
- Longer auctions increase auction prices
  - up to 10 days (42% higher prices)
- Reserve prices increase auction prices
  - up to 15%

[Pennies from eBay Lucking-Reiley et al, 2000]

eBay Current Situation

- eBay has active sites in 30+ countries
  - often by acquiring a successful local site
  - then converting it to use eBay software and servers
  - network effects mean only one auction site per country survives
  - eBay tried and failed in eg China (too western?)
- Has been involved in several legal cases, eg
  - counterfeit items (France 2008/9: lost, US 2008: won)
- In 2010 rated 13 out of 15 top eCommerce sites
  - but is still third by volume (behind Amazon and Taobao)
- Fixed price sales outnumber auctions
  - more professional sellers, fewer casual users & collectors
  - stubhub, and eBay classifieds have helped it diversify
- Spinning off PayPal may help it to thrive
  - and allows eBay to concentrate on its core business
eBay Quick Facts

• Around 12.6K staff, 167M active buyers, worldwide
  – around 800M live listings at any point in time
• $10.7B total sales, and $2.4B total revenue
  – 87% of sales are fixed price, 81% are new items
  – 57% of sales are international
  – 59% involve mobile devices at some point
• StubHub sells tickets
  – $1.2B sales volume, $279M revenue for eBay
  – included in the figures above

Activity

• It is clear eBay is no longer a C2C auction site
  – they have moved to a different business model
  – and are now competing with eg Amazon
• What is their current value proposition?
• Should they change their name to match this?
• Discuss with your neighbour
Session 10

The On-Demand Sharing Economy

Excess Capacity

• Many economic sectors have excess capacity
  – most roads are mostly empty most of the time
  – most rooms in your house are mostly empty too
  – your car is parked more often than being driven
  – and similarly for most of your possessions
    • except possibly your mobile phone 😊
• Finally, people have spare time
  – and some of them want to earn extra money
  – or just give their time for free to a suitable cause (?)
• The sharing economy aims to exploit this capacity
Peers Inc (Robin Chase, 2015)

• In this book, the founder of Zipcar claims
  1. Excess capacity lets us defy the laws of physics
     – in just 4 years, Airbnb grew bigger than established hotel chains such as Intercontinental (65 years old)
  2. Smart platforms produce exponential learning
     – within 3 years, Duolingo taught 50 million users 15 languages for free (now has 150M registered users)
  3. Diverse networked peers means instant access to the right mind
     – telemedicine, crowd funding, on-line disaster response
Uber Technologies Inc

• Founded in 2009, headquarters in San Francisco
  – provides apps for booking car rides / food deliveries
  – still a private company, no IPO announced to date
  – funded by 14 investment rounds totalling $11.5B
    • giving an estimated total value of $68B
  – operates in 570 cities in 60 countries worldwide
    • but not in China where Didi Chuxing is more successful
  – 2016 $20B revenue, $6.5B EBIT, $2.8B loss
• Has attracted protests, demonstrations, lawsuits
  – is all publicity is good publicity?

Uber Business Model

• Uber apps allow users to request a ride
  – may be private or shared (UberPool)
  – the fare is usually quoted in advance
  – dynamic pricing copes with eg high demand
  – Uber takes a percentage (around 20%) of the fare
• Users must have a smartphone to book
  – and also a credit card to create an account
• Drivers are rated: 1 to 5 stars
  – lower rated drivers get less / unattractive business
  – so they have an incentive to provide good service
Uber Drivers

- Uber depends on self-employed drivers
  - “be your own boss, drive your own car”
  - “set your own schedule, drive when you want”
  - “make your own money”, “get paid weekly”
- Some have previously driven regular taxis
  - and others are students earning summer cash
  - you can even rent a car from Uber if necessary
  - for example, if you car is not an approved model
- Drivers also need the right licence & insurance
  - and attend training on customer service

Ride Sharing

- Ride sharing sites have existed since the 1990s
  - most of these failed, however
- Inhibitors include
  - owning your own car is more flexible & reliable
  - for some people their car is a fashion statement
  - ignoring the capital cost of owning your own car
  - people like their own space & don’t want to share
  - concerns for personal safety
- So Uber must be doing something right!
Activity

- Consider the comments below
  - do you agree with them?
  - discuss your views with your neighbour

- On-demand workers are less secure
  - no paid holidays, sick pay, redundancy, unions

- The on-demand economy is exploiting them
  - eg by paying low wages, but extracting high profit

- The traditional economy has failed
  - there are not enough good quality jobs for everyone

Airbnb

- Another successful sharing business, started 2008
  - web site /app allows short term room rentals
  - charges guests 6-12%, and hosts 3% of the fee
  - lodgings in 65K cities, 190 countries worldwide

- Based in San Francisco
  - still private, no IPO date announced as yet
  - has raised over $3B funding, valued at $31B
  - made its first profit in 2016 ($100M on $1.7M revenue)

- Both hosts and guests review and rate each other
  - hosts may require guests to scan passport / ID card

- Involved in various legal cases and controversies
Deliveroo

- Founded in 2013, based in London
- On-line (cooked) food delivery company
  - self-employed couriers on cycles / scooters, up to 2.2 Km
  - aims to deliver within half an hour, while food is still hot
  - in 2016 signed a deal to deliver Heineken beers
- Still private, no IPO date announced to date
  - charges customer £2.50 and the restaurant 10%
  - has raised funding of around $475M
  - revenue of around £130M in 2016
- Involved in various legal cases and controversies
Ofo

- A unicorn is a new company with a $1B valuation
  - in 2017 17 unicorns occurred in the US, 15 in China, and 5 in Europe
- Most of these Chinese unicorns are on-line businesses
- Ofo is an on-demand bike sharing start up launched in 2014
  - you get a code to unlock bikes from their smartphone, and pay 50p / 30 mins
  - bikes are all around the city, and there is no need to return them to a “dock”
  - a maintenance team looks after bikes and re-locates them as necessary
  - 200 cities worldwide include Cambridge, London, Norwich, Oxford, Sheffield
  - Ofo investors include Alibaba ($700M) and Didi Chuxing & Xiaomi ($130M)
  - there is competition from Yobike and Mobike, which is supported by Tencent
Social Business and Enterprise

• When the primary motivation is social good, cf commercial gain, a different phrase is used
  – social business (also known as social enterprise)
• Yunus promoted this idea in his Nobel prize lecture
  – awarded for his Grameen bank, which used
  – microcredit peer lending to lift millions out of poverty
• A social business aims to return capital to investors
  – but re-invests profits in its social goals, not dividends
  – eg provide healthcare, clean water, housing & nutrition

Peer Contributions

• Many e-businesses rely on peer contributions
  – rating & reviews in Amazon, eBay, social networks
  – crowd sourcing / funding also relies on these
• Free and open source software can be high quality
  – Torvalds’ Linux, Apache’s web server, Mozilla, ...
  – likewise open source content eg Wikipedia
• Monetising peer contributions requires care
  – Amazon banned paid / incentivised reviews in 2016
  – these gave 4.74 average ratings, higher than the norm
  – paying people for work may not raise its quality
Activity

• Consider open source software and content

• How have you benefited from such systems?
• What contributions have you made yourself?

• Are these systems sustainable?

Activity

• Is the on-line sharing economy most suited to
  – traditional (profit making) businesses,
  – social (non profit making) businesses, or
  – charities
J. Lyons Food Manufacturer & Caterer

- Started in 1887 catering for trade shows
  - meticulous planning, high quality, control of costs
- Expanded into many other areas
  - Lyons Tea, Cakes, Ice Cream, Teashops
- Self-sufficient
  - developed catering machines for their own factories
- Employed top graduates, eg J Simmons 1923
  - to build up a system of information for management
  - more than just the profit and loss account
- Simmons joined the Board in 1950 as Comptroller
  - had set up the Systems Research Office
  - how to answer “what if” questions
    - the effect of producing 10% more Swiss rolls, 3% fewer cupcakes
LEO: The First Business Computer

• During World War II, working computers were developed in secret at Bletchley Park
  — before then, few computers existed, slow or restricted
• After the war, Universities started their own designs
• Lyons toured the US to find out about these
  — and were told that Cambridge, UK, was ahead
• They set up a link, funding Cambridge’s EDSAC
  — Lyons staff were seconded to the EDSAC team, who also
  — helped Lyons recruit a chief engineer to design LEO,
  — the Lyons Electronic Office, large scale data processor
• LEO started 1949, pilot running in 1951, launch in 1953
  — an extraordinary achievement in post-war Britain

LEO Business Case

• The report to the Board stated that computers will have
  — “a profound effect on the way clerical work is performed”
  — “possible savings” should be “at least £50K per year”
  — capital cost will be around £100K
• It was felt that waiting for commercial computers
  — would not “enable us to have any influence”
• The first application was called bakery valuation
  — weekly information about the value of cakes baked
• Later on, teashops telephoned in their order daily
  — or rather the difference of their regular order
  — this automated the management of inventory
• LEO also automated wage payments or payroll
  — calculation took 8 minutes by hand, 1.5 seconds using LEO
Activity

• What might contribute to the £50K savings?
• What other benefits might be realised?

Toyota & JIT

Source: Toyota Production System, Sugimori et al, Production Research 1977

• Any manufacturer must manage inventory
• The traditional approach is vertical integration
  – own the mines which make your iron & steel
  – build the canals which transport your goods
  – push the raw materials into the factory when available
• Just In Time turns this around
  – order the parts you need, as and when you need them
  – this significantly reduces the cost of capital
  – and avoids the need for storerooms in factories
• Part of the famous Toyota Production System
  – which also includes Kanban capacity management
• Nowadays JIT is referred to as lean manufacturing
Activity

- A breakfast factory serves 1000 meals per day
- Estimate the capital cost of keeping these in stock
- Estimate also the recurrent cost
- Assume that a savings account pays 5%
- How much would JIT ordering save per year
  - if the capital was kept in a savings account instead

MRP and ERP

Source: ERP, a brief history, Jacob & Weston, Operations Management 2007

- Manufacturing / Enterprise Resource Planning
- Started with MRP in the late 1960s
  - a partnership between J I Case and IBM
  - exploited RAM cf tape to expand a bill of materials
    - originally MRP was material requirements planning
    - covers planning, scheduling, procurement, production
- By the mid 1970s, also covers costings, orders, accounts
  - modifications were also needed to support JIT
- In 1990, Gartner introduced the term ERP
  - software integrated across functional “silos”
- In 2005 Oracle bought PeopleSoft & J D Edwards
  - leaving them and SAP as the main vendors by market share
Fragmented applications infrastructure (a)
Source: Chaffey, Digital Business and E-Commerce Management, 2016, Fig. 2.12, adapted from Hasselbring (2000)

(b) integrated applications infrastructure (continued)
Activity

- The previous diagrams only show three areas
  - procurement & logistics, finance, marketing
- What other divisions do most companies have?

Airline Reservation Systems

source: Copeland and McKenney, MIS Quarterly 1988

- Originally, flight capacity was managed manually
- Electro-mechanical systems available in the 1940s
  - goal of saving clerical costs, then increasing accuracy
  - to manage capacity, baggage handling, food, fuel
- IBM and American Airlines feasibility study 1953-8
  - led to the development of SABER, 1961—1964
  - copied by other airlines such as Delta and Pan Am
  - and the PARS system was marketed independently by IBM
  - an OS/360 message driven teleprocessing system
  - by 1972 9 out of 10 major US airlines used SABER or PARS
Airline Retail Automation

- In 1967 American placed terminals with travel agents
  - at the time, they were responsible for 30% of all sales
  - 70% sold by airline offices in cities or desks at airports
- PARS functions included fare quotation, advance check-in, issuing board passes, stand-by tickets
- Technical issues delayed an industry standard solution
  - to start with each airline offered its own system
  - led to competitive advantage (halo effect, display bias)
- In the 1980s a number of legal cases were filed
- Following airline de-regulation, global distribution systems are now provided by independent companies
  - for example, Amadeus, Travelport, Sabre, Shares
  - airline retail messages have now been standardised
Activity

• Where can mobile tickets now be used
  – what are the benefits to the company?
  – what are the benefits to its customers?
• Where can they still not be used
  – what barriers prevent this?
  – how can these barriers be overcome?
• List the technologies, both hardware and software, which enable mobile ticketing

Session 12

Financial Technology
EFTPOS:
Electronic Funds Transfer at the Point of Sale

- Used for credit or debit card payment in store
  – rolled out in the US starting in 1982

Inter-Bank Transfers

Inter-Bank Transfers

- Within the UK, BACS has been in use since 1968
  - Banker’s Automated Clearing Services
  - originally, magnetic tapes were sent between banks
- Can use the SWIFT international message standard
  - Society for Worldwide Financial Telecommunication (1977)
- Direct messages are quickest, but most expensive
  - or send messages via a third party who aggregates transfers
- Inter-bank payments typically must pay commission
  - this is a fee to cover the cost of infrastructure
  - and also insurance if something goes wrong with the transfer
  - typically a small percentage (0.5 – 2.5%)
  - based on number and size of payments, and level of risk

Netting and Ledgers

- To reduce costs companies can use netting
  - within one large / multinational company, or
  - a consortium sets up a private clearing house
  - only use bank transfers for the daily total
  - pay bank and exchange fees only on this amount
- The netting agent maintains a ledger
  - a history of all payments, for auditing purposes

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Activity

- Consider the payments shown below
- Assume bank transfers have a 1% commission charge
- How much bank commission is paid using direct transfers?
- How much commission is paid if netting is used instead?

Bitcoin

- The most successful on-line / crypto-currency
- Invented by “Satoshi Nakamoto” in 2008
  - the author is still unknown, owns around $1M BTC
- Unlike traditional currency has no state backing
  - neither a gold reserve, nor central bank support
  - yet is now accepted worldwide, ~3M users
- Attractive where conventional banking fails
  - transfers between currencies are often expensive
  - some people/countries have no access to banks
Bitcoin Technical Aspects

- Digital signatures are used to confirm payments
- Blocks of these are hashed to timestamp them
- Each block contains a hash of the previous one
- The block also contains a nonce
  - chosen so that block's hash starts with 0..0 bits
  - generating it requires significant computing
- If the majority of nodes are honest, the chain of blocks is an honest record of payments
  - proof of work is essentially one vote per CPU
- System parameters are adjusted automatically
  - to allow for CPUs getting faster, and to issue new bit coins
Simplified Chain of Ownership

Bitcoin: a peer to peer electronic cash system, S. Nakamoto 2009

Block Chain Start-Ups

- The block chain can support other applications
  - much has been written about financial technology
  - McKinsey claims 2-12,000 fintech start-ups exist
    - of which perhaps 27 are unicorns (worth $1B or more)
  - the dotcom bubble saw 450 start-ups, only 5 survived
    - including paypal (thanks in part to its link with eBay)
- The current situation is different
  - millennials are less loyal, more mobile centric
  - lower fees provide strong incentives
  - there are new technologies eg the block chain
- So a higher proportion of start-ups may succeed
New Business Opportunities

• Successful businesses need to acquire customers more cheaply and increase their profit margin
  – partner with existing companies to acquire customers
  – and build on their existing infrastructure
  – use new technology to lower the cost of service
• Use data in new ways
  – understand customer needs, identify good prospects
• Pick good market segments
  – millennials, small business, the “under-banked”
• Predict and avoid regulatory penalties
  – legislation against money-laundering, discrimination, ...

The Business Blockchain (Mougayar 2016)

• Blockchains offer a new paradigm for trust
  – computed by machines, not verified by people
  – based on identity & reputation sharing
• Google will be able to prove if something occurred
• Smart contracts will open up new business applications
  – existing businesses must adapt or die
  – decentralisation is easier if you start it from scratch
• The current challenges are similar to those faced by the new web-based e-businesses in the mid 1990s
• Blockchain can scale & regulate as & when needed
  – governments should not rush to introduce new legislation
Smart Technologies

- Smart *property* is an asset which knows who owns it, and is protected by a smart contract
- A smart *contract* is one which is
  - digitally signed, and
  - can digitally enforced
  - for example, a flat or car you are renting that is protected by a digital lock which automatically locks you out if you fail to pay the rent when due
- These can be built using a block chain as the reliable record of agreement

Activity

- Where do you prefer to keep your money
  - in a traditional currency and bank,
  - in a traditional currency and on-line bank,
  - in an electronic currency and on-line bank, or
  - in an electronic currency and digital wallet?

- Discuss your answer with your neighbour
Activity

- These slides have not covered any financial technology company as a case study
- It is not clear to me which, if any, would be a good choice
- Can you recommend a suitable start-up?