Pricing Strategy of Digital Products

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Motivation

- Why e-business is so difficult to make profit?
- Easy to start e-business, easy to fail
- Developing web server is just like raising signboard
- We only know one star company but do not know thousands of fallen rocks.

- Need to know the digital product itself.
- Pricing digital product is difficult because
  - Digital product can not be scarce
  - Unlimited supply
  - Quality uncertainty

- Different economy and management situation: production, inventory, advertising, sales, marketing, pricing, etc.
- Need new principles of Digital Economy, Digital Company Management

- Inter-Disciplinary
- What's after the era of e-business?
  - Efficient market, the dream of economists?
  - Or monopoly by a global enterprise?

- Super highway -> virtual community -> e-business
- The key factors: electronic marketplace

What are digital products?

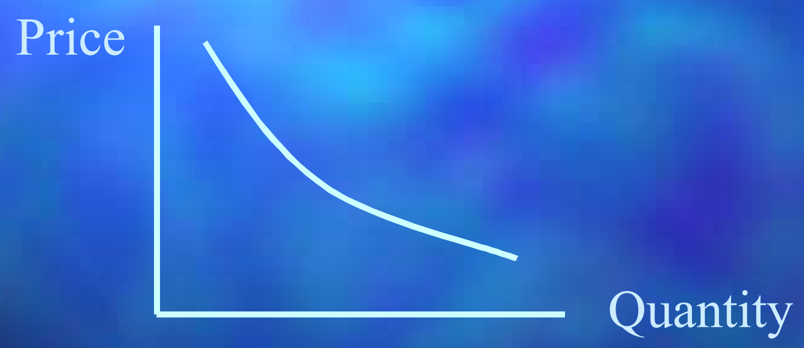
- Information
- Entertainment product
- Symbols, tokens and concepts
- Processes
- Services

Characteristics of Digital Products

- Indestructibility
- Transmutability
- Reproducibility

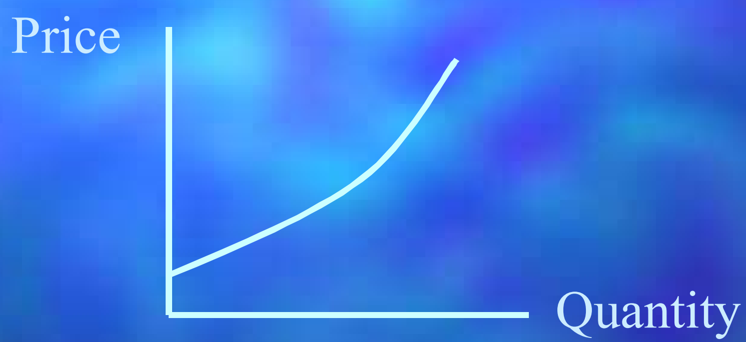
Basic economic theories

- Demand Function
  - $D_n = f(P_n, P_1, \ldots\ P_{n-1}, Y, T, P, A)$
  - Quantity = f(Price) : ceteris paribus
- Demand Curve



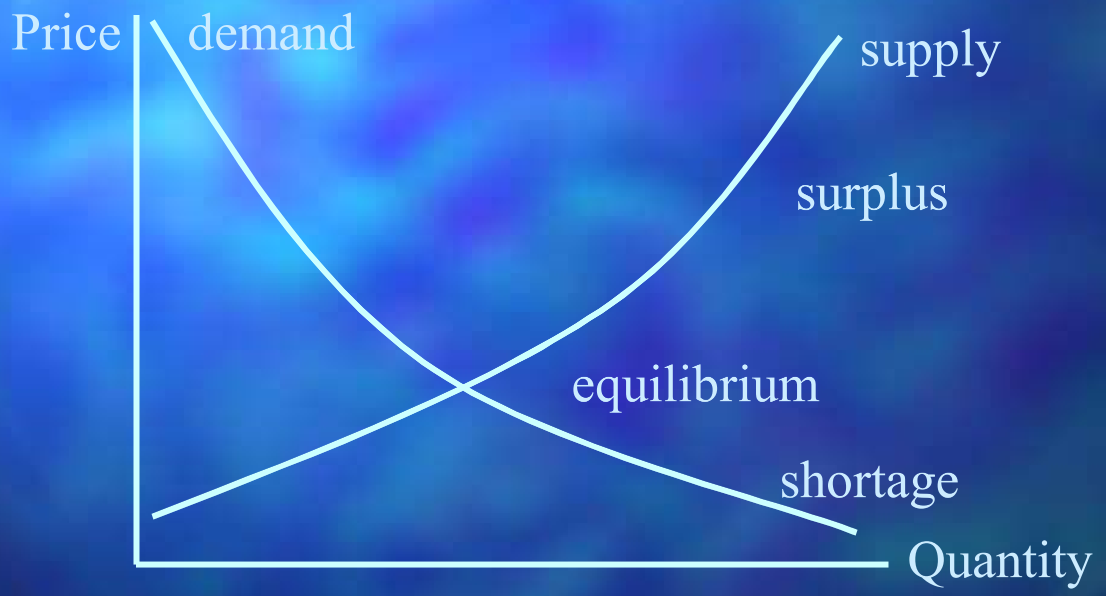
- Law of demand
  - Upper limit
  - Shift of demand curve

- Supply function
  - $S_n = f(P_n, P_1, \ldots, P_{n-1}, F_1 \ldots F_m, T, G)$
  - $S = f(P)$: ceteris paribus

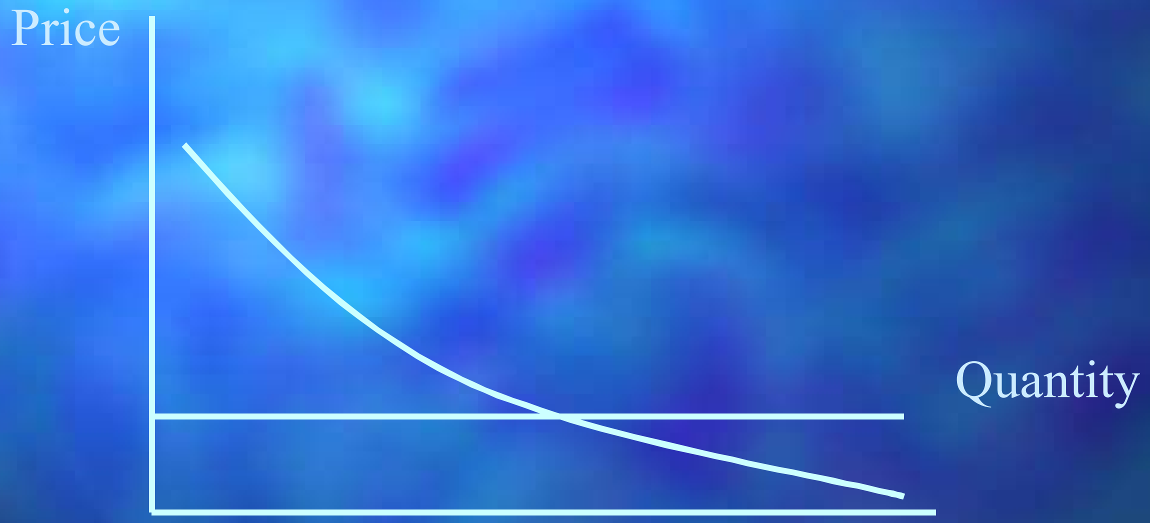


- Law of supply
- Upper limit
- Shift of supply curve
- The shape of supply curve of digital products

Equilibrium

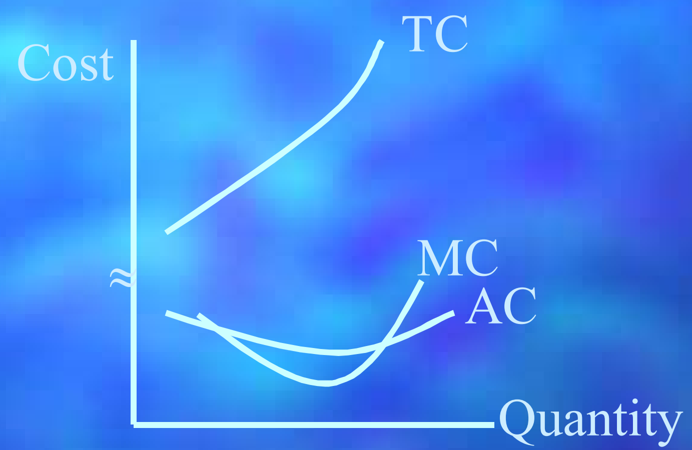


Digital products



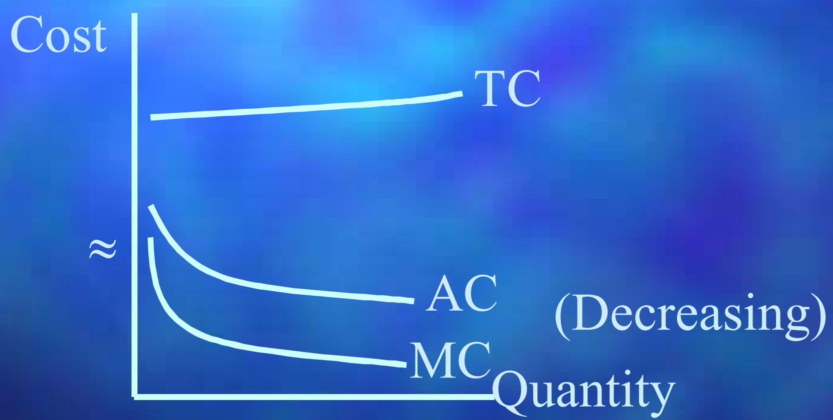
Concerns of output level in terms of material and labor input is meaningless
Only the first copy of digital product concerns resource allocation
There are not natural capacity limits for additional copies

Cost function



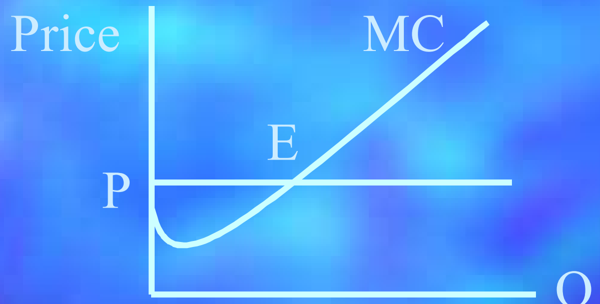
- Fixed cost (sunk cost)
- Variable cost
- Average cost (Total cost / Quantity)
- Marginal cost ($\Delta TC / \Delta Q$)
- Lower limit
- When AC is increasing, MC > AC, when AC is decreasing MC < AC

- Digital product is costly to produce but cheap to reproduce
- Once the first copy of a digital product has been produced most costs are sunk and cannot be recovered



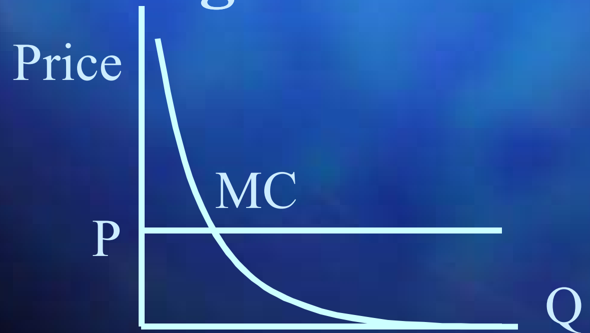
- Incremental cost (marginal cost) of production is zero.
- Competition among sellers of digital product pushes prices to zero

- **Marginal cost**



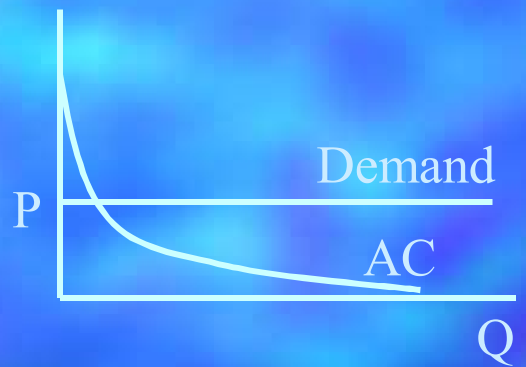
  - MC= P
  - MC curve = supply curve

- **Marginal cost of digital products**

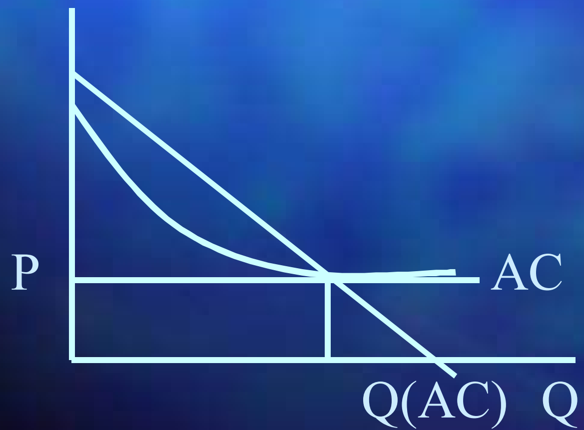


  - MC -> 0 (Is it true ?)
  - Per-copy copyright

- **Competitive situation**



- Monopolistic(market power) situation



Pricing strategy in competitive situation

- Dominant firm model : achieve cost leadership
- Reduce average cost by increasing volume through reuse and resale
- First-mover advantage
- To discourage entry, avoid greed and play tough

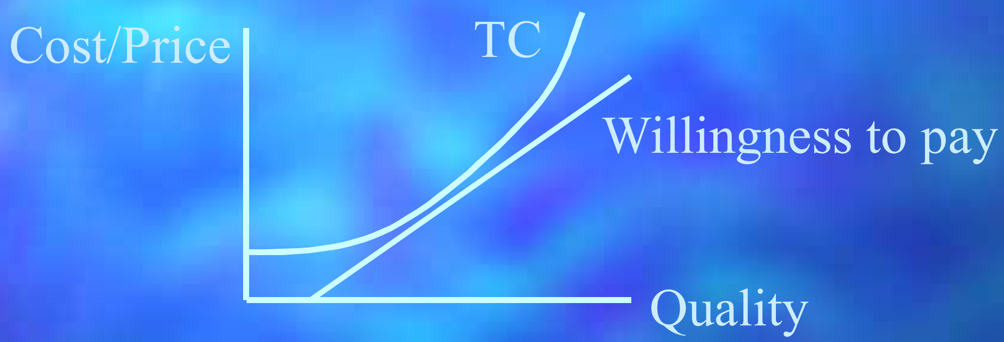
How to gain market power?

- A monopolistically competitive firm can choose a profit maximizing price level instead of merely accepting the market price.
- The steeper demand curve indicates monopolistic market situation
- To gain monopolistic market power differentiation is necessary
- Quality, user valuation, preference.

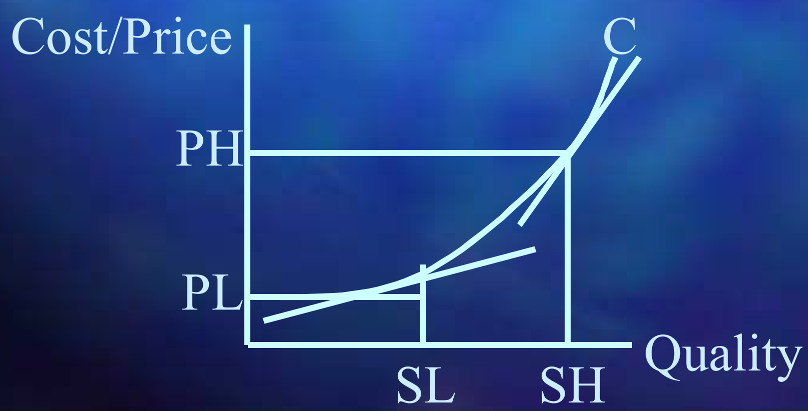
Experience good

- Consumers must experience it to value it
- Uncertainty regarding the quality of products can lead to the collapse of market
- Branding, Reputation, Preview, Trusted third party

- **Quality**



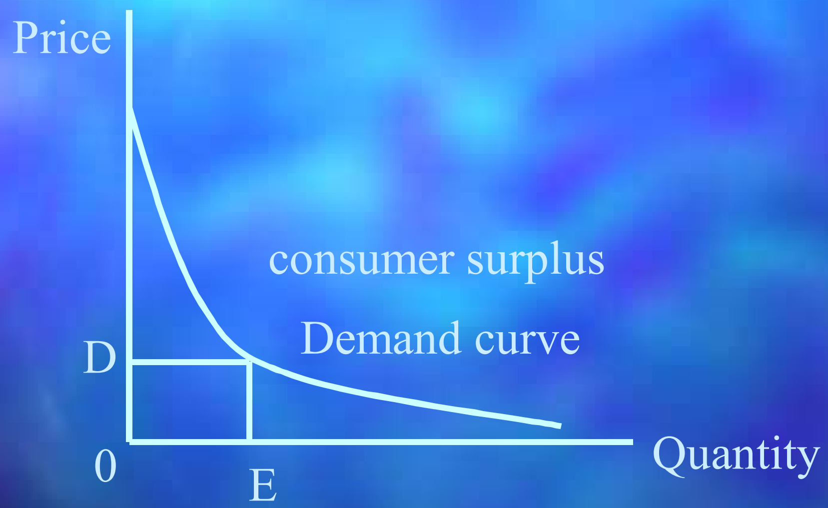
- **Product differentiation**



Product differentiation

- Transmutability， Minimize competition
- Product differentiation, different segment of customers
- Customize products and charge individualized prices

- Perfect price discrimination
  - Different prices for different consumers based on detail consumer information
  - Prices are individualized to extract all individual consumer surplus
  - Reselling among consumers must be prevented
  - Online negotiation and auctions
  - Transmutability of digital product
  - Consumers can be billed independently



Negotiation process and information gathering may be more costly than extra revenue

Attention

- Viewer's attention
- Portal
- TV advertising model vs. Internet advertising model
- Point-to-point matching

Pricing Strategy [Shapiro & Varian, 1999]

1. Personalized pricing: sell to each user at a different price

   Personalize your product and personalize your pricing

   - Know your customer
   - Differentiate your prices when possible
   - User promotions to measure demand (price sensitivity)

2. Versioning : Offer a product line and let users choose the version of the product most appropriate for them

   - dimension : Delay, User Interface, Capability, etc.
   - Three version strategy

3. Group pricing : Set different prices for different groups of consumers, as in student discounts.

- Group price sensitivity
- Network effects (the value one user places on a good depends on how many other people are using it)
- Lock-in
- Sharing

Non-sale method

- Renting
- Licensing
- Leasing
- Bundling
- Microbundle
- subscription

Conclusion

- New principles of economy and management to deal with digital product
- Reduce average cost
- Customization
- Quality
- Attention