

Role of information and IT

Introduction to Service Science
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What is the information?

➤ In common language

➤ Knowledge to be presented, content of the message, answer to a question

➤ In science

➤ Data on the properties, setting and arrangement of the object

➤ In informatics

➤ Coded data that can be sent, received, saved and processed by technical equipment

Economics view to information

- Till 60s of 20th century
 - Information are „perfect“
 - All parties have same access to the information
 - Information are public goods
 - Some authors mentioned marginal problem to access information (Smith, Marshall, Keynes)
- 1961 - George Stigler - Economics of information
 - Information is valuable source
 - First try to set the price mechanism

Economics of information

➤ Perfect information

- All participants of the game can see the cards of others as well as the undistributed cards in the package

➤ Incomplete information

- All participants have the same information, but no-one has information advantage

- All participants can see cards of the others, but undistributed cards are hidden

➤ Asymmetric information

- All participants can see only their cards
- Some information is private

Economics of information

- The game theory - one of the sources of analysis
- Imperfect information
 - One player does not know the behavior of the others
- Incomplete information
 - One or more players do not know one or more aspects of the game rules, necessary for their decisions

Stigler's model

➤ Seniors game

➤ Where to buy a particular good for the cheapest price

➤ Assumptions

➤ The buyer knows all shops, where he can buy this product

➤ The buyer does not know the prices in the shops

➤ The buyer is willing to invest some costs to find the information about the cheapest price

➤ The amounts of those costs are limited

➤ What do we do now to solve this problem?

The searching costs

- The valuation of the time, needed for the finding of the information
- The costs for the searching must be same or less than expected profit
- Conclusions
 - The costs for the searching are individual
 - The reduction of the problem to the price difference is wrong
 - The value is also important
 - The analysis of the problem is too simple
 - IT rapidly decline the searching costs

Quality of information

➤ If you are buying some product or services, how you can be sure about its quality?

➤ Guarantee

➤ Insurance for the product failure

➤ Impulse for the producer to improve the quality

➤ Has information value - indicator of the product quality

➤ Direct influence to the producer reputation

➤ Selecting (extended) guarantee can be used for the customer discrimination

Moral hazard

- a tendency to take undue risks because the costs are not borne by the party taking the risk
- The customer is able to affect an event he is insured against, but the seller has no power to monitor or affect this event.
 - Insurance company do not know how you use your car
 - ERP supplier has limited information about customers IT security
- Double moral hazard
 - Supplier gives only limited or minimal guarantee
 - Customers information about product quality is limited

The market of Lemons

➤ Author G. Akerlof

➤ Lemon = used car

➤ Main assumption

➤ Every used car has hidden defect

➤ If it would not have, the owner should use it instead of selling it

➤ The owner of the good car is not motivated to sell the car

➤ The quality of used cars on the market is very low

Conclusion for Lemons market

- The price for the comparable cars will be the same
- The buyer has limited possibilities to recognize the real quality of the car
- If the quality of offered cars would drop under level of the price, the market would be empty

Auctions models

➤ Situations

- Monopolist sells a special kind of product or good (art)
 - Not able to estimate the value for the buyer
 - To declare a price
 - Someone is willing to pay more
- Monopson buys a special kind of the service
 - Not able to estimate the real costs
 - To declare a price
 - Someone is willing to deliver the service cheaper

➤ Solution

- Move the asymmetry to the other part of market

Types of auctions

- With common value of the product
 - Each participant has his own value of the product
 - Participant do not know the valuation of each other
- With independent private value of the product
 - There is only one objective value of the product
 - Nobody knows it

Auctions with independent value

➤ English auction

- The price grows according to the orders
- The highest price wins

➤ Dutch auction

- The price is set on the highest lever
- The price is reduced
- The first call wins

Auctions with independent value

➤ Closed auctions

- The offers are given before

➤ the first price auction

- The highest or the lowest price wins

➤ The second price auction

- The highest and lowest offer are excluded

- The second highest or lowest offer wins

Information gap

- Subjects on the opposite sides of the market have a different information about the subject of exchange
 - Seller has better information about the car
 - The insurance company must trust in its clients responsibility
- Information gap is the difference between two subjects on the market
 - Is positive - if the subject knows the information
 - Is negative - if the subject does not know the information

Information gap

- Moral hazard - effect when the activity of one subject decreases the utility of the second subject concurrently with information gap on side of the second subject
- Information gap is not stable
- Examples
 - Try to find an example of the information gap you have met

How to fit information gap?

➤ Filling the gap

- By distribution of the information?

- Removal of subject's disadvantage, based on nascence of particular information

- Subject must be willing to invest to filling of the gap

- The first condition is to identify the gap

- The filling is the function of time

➤ Questions

- How will the subject fill the gap?

- Can the gap be filled by itself?

Filling the information gap

➤ Absolute

➤ The information are distributed from one side to the other

➤ Example

➤ Register of insured persons

↳ To know a history of new client

➤ Register of debtors

↳ To eliminate to risky clients

➤ Subjects facing negative gaps can join even if they are competitors

Filling the information gap

➤ Relative

➤ If there is no way how to get the information

➤ Example

┆ Bankrupt of travel agency

┆ The client has no power nor possibility to find the information

┆ Mandatory insurance of travel agency

┆ The client does not need to take care about travel agency finance

┆ Mandatory car insurance

➤ Relative filling is the eliminating of the gap's influence

More general attitude to information gaps

➤ Direct methods of filling

- If the aim is particular information gap

➤ Indirect

- The aim is more general

- To prevent the creation of information gap

- To solve whole problem

Indirect method to fill the gaps

➤ Source of information

- Subject that provide the knowledge or information

- The way of transfer of the information

- Primary source

 - Author of information

 - No changes on the character of information

- Secondary source

 - Information is transformed

➤ Information channel

- If more sources of information join to use the same way of transfer

Role of IT

➤ IT is a tool to:

➤ fill the gap - to distribute information

➤ To eliminate the gap - using IT services to interconnect subject with negative effects of a gap

➤ Manage the information

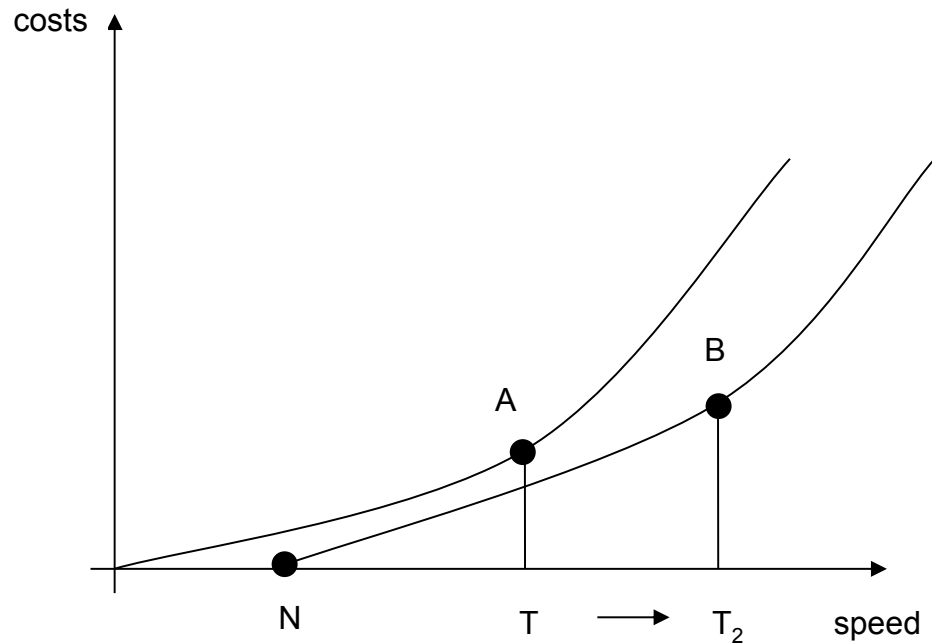
➤ To prevent the influence of the gaps

➤ To eliminate the gaps

The price of information

- Is almost individual
- It is equal to the searching (opportunity) costs
- It is important to divide the price of information and the price of access to information
 - To buy the possibility to search
 - To buy a possibility to share information
 - The question of technology
 - Higher speed means higher probability to find what I am looking for

Technology progress



Government and information

- It needs the information for making of the decisions
- It is important source of information
- It is supervisor on the market with information

Government as the information receiver

- The most of analysis is done by
 - state institutions
 - ministry clerks
 - National bank
- The government is the source of information for itself
 - The analysis can be wrong
 - The decisions can be wrong - moral hazard
 - The question of time

The government and searching of information

- Where is the equilibrium of searching
- Stigler model does not work
 - The process of searching is excluded from the process of evaluating and using of the information
 - The person who is searching does not know the effect
- We can not be sure that the government has right information
- We can not be sure the information are correct
 - Moral hazard
 - The Greece

The government as the source of information

- The government is not one source of information
- The motivation of the clerks
 - To publish only the information that are good for them
 - Moral hazard
- The subjects need the information from other source to prove it

The government regulates the market of information

➤ Direct approach

- Problem of the identification of information gap

- Absolute filling

 - How to do it

 - Law - market subject must give some information to the register

- Relative filling

 - Not necessary to identify a specific problem, just a group of problems

 - Mandatory insurance

The government regulates the market of information

➤ Indirect approach

- Development of information sources and channels
- Support of using services
 - Data mail-boxes
 - Digital signature
 - E-government
- Supporting the development of the information access