



# 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