

# Product management

## Product innovation process

### Lecture 7

## Product and innovation

- Product are „living“
- There is permanent need to adapt products and its marketing to changing environment and market situation.
- Process covered behind that need is called INNOVATION

## Basic Principles of Innovation

- Innovation appears to have its origin in Latin „Innovare“ –
  - meaning to renew, to make new or to alter, new way of doing things
- Innovation characteristic:
  - **Process from idea generation to commercialization**
  - **The adoption of change,**
  - **Radical change in traditional ways vs. incremental change,**
  - **New device or something new to society**
- There are many products, processes, services, organizational structures, ideas, technologies behaviors that have been awarded the title of „innovation“ because
  - **They improve our quality of life**
  - **They have radical impact**
  - **They are new**
  - **They are not new, they are old things in new forms or combinations of existing forms**

## Product Innovation Categories (producer view)

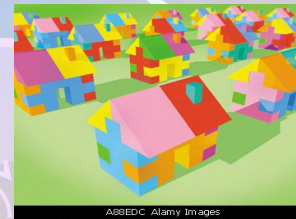
- 1<sup>st</sup> – new to the world products, brand new products on the world market
  - Polaroid camera, in-line skates, word-processing software
- 2<sup>nd</sup> – new to the company – new category entries, new range of products that allow company to enter new market
  - Hewlet-Packard: mainframes, PCs
- 3<sup>rd</sup> – additions to product lines, new products that extend company product portfolio
  - chocolate bar – frozen, nonalcoholic beer, new categories of cars
- 4<sup>th</sup> – product improvements, new products that are improvements of old ones or their replacements
  - Windows 98,2000, yogurt drink, cars-design facelift, new generation of cars
- 5<sup>th</sup> – new markets for existing products
- 6<sup>th</sup> – price decrease – new products which fulfill old function with lower price

# Common Definitions of Innovations

- An **innovation** is **successful** implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.
- A creative process in which two or more existing things are combined in some novel way to produce unique new thing
- Successful implementation of creative ideas within organization.
- Innovation = Invention + usage, development of invention to success in the market, product with commercial value
- Everything that changes the potential of already existing sources of wealth
- Management process that requires specific tools, rules, and discipline.

# Some Common Definitions of Innovation

- A novel new device, concept based on creative idea
- A complex set of activities from the conceptualization of a new idea to its reduction to practice
- The adoption of a change that is new to the organization, group, or society
- Anything that is new as it is different from the existing forms
- Anything perceived by the individual or user as new



# Schumpeter's Understanding of Innovations

- The term innovation is linked to American professor of Austrian origin Joseph A. Schumpeter
  - in the beginning of 20th century he analyzed business conditions in which the companies conduct the combination of development changes, that he called „innovation“. In the Theory of Economic Development he defined economic innovation.
- Schumpeter defined 5 typical changes, that lead to development:
  - Introduction of brand new product into the market
  - Instalation of brand new technology, brand new processes
  - Utilization of brand new raw materials
  - Changes in organization of an industry (creation of monopoly position or breaking up monopoly position)
  - Opening of brand new markets

# Schumpeterian view on Innovations

- A Schumpeterian perspective tends to emphasise innovation as
- market experiments and to look for large, sweeping changes that fundamentally restructure industries and markets.
- Mainstream or neoclassical economics views innovation in terms of asset creation as well as market experiments.
- In this view, innovation is an aspect of business strategy, or part of the set of investment decisions to create capacity for product development or to improve efficiency

## Types of Innovations

- a) by character
  - **Technological innovations**
    - **products**
    - **processes**
      - **technology**
      - **administration**
  - **Social innovations: leasing, insurance**

four types of innovations are distinguished and measured in EU (defined in Oslo manual) :

- product innovations,
- process innovations,
- marketing innovations and
- organisational innovations.

## Types of Innovations (Oslo manual of EU)

- **Product innovation** is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.
- **Process innovation** is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.
- **Marketing innovation** is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- **Organisational innovation** is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.

## Types of Innovations

- b) by motivation
  - **means generated - technology push**
    - **innovation based on invention, arise from technical capability of the company, the company role is to find the market or create the need**
  - **needs generated demand pull - innovation based on solving existing customer problem, response to documented need or demand.**

## Questions to ask for evaluating

- **Technology push opportunities**
  - What is the level of technical uniqueness of the solution? Is it easy to copy?
  - Does this solution increase product value? How big is the increase?
  - Can the new solution be patented? Can it be sold as licence?
  - Is it possible to produce the proposed solution on state-of-the-art technology means or it will request investment into new technology?
  - What will be the lifecycle of the product?
  - Is the new technical solution risky? What is the degree of risk?
  - Have the employees the right skills and capabilities?

# Questions to ask for evaluating

- **Demand pull opportunities**

- How big is the demand in the given segment of the market? Is it major area of our business or just marginal one?
- What is the degree of unmet consumer need that the product solves?
- How does the product differ from the competition?
- To what level does the product solve present consumer needs?
- Will it be difficult to present the product and its benefits to the customers?
- How strong are our competitors?
- Have we got suitable distribution channels?

## Innovation degrees (whole production process)

- 9 innovation degrees provide differentiation and classification of innovation from the content and importance point of view
- -1<sup>st</sup> degree – minus first degree innovation DE
  - degeneration, destruction
- 0 degree – zero degree innovation RE
  - regeneration
- 1<sup>st</sup> degree – first degree innovation EE
  - Extensive expansion, simple quantitative change
- 2<sup>nd</sup> degree – second degree innovation RR
  - Re-arrangement, re-organization of relationships
- 3<sup>rd</sup> degree – third degree innovation QA
  - Quality adaptation

## Innovation degrees

- 4<sup>th</sup> degree – fourth degree innovation V
  - New variant
- 5<sup>th</sup> degree – fifth degree innovation G
  - New generation
- 6<sup>th</sup> degree – sixth degree innovation K
  - New kind
- 7<sup>th</sup> degree – seventh degree innovation P
  - New principle
- 8<sup>th</sup> degree – eight degree innovation P
  - New paradigm

## Innovation degrees

- Innovation degrees from the 1<sup>st</sup> to the 3<sup>rd</sup> are mostly connected with the production processes
  - Process innovations
- Innovation degrees from the 4<sup>th</sup> to the 7<sup>th</sup> grade are connected mostly with products
  - Product innovations
- Approximate time of product innovation in years
  - 4<sup>th</sup> degree: new variant - 1 to 5 years
  - 5<sup>th</sup> degree: new generation - 5 to 15 years
  - 6<sup>th</sup> degree: new kind - 15 to 50 years
  - 7<sup>th</sup> degree: new principle - more than 50 years
- In recent decades the dynamics has accelerated



## Supportive culture for innovation - by Peters and Waterman- 7S

- **SKILLS** - the distinctive capability of key personnel
- **STRATEGY** - long-term goals and the ways to fulfill them, the plan leading to the allocation of resources
- **STRUCTURE** - the characteristics of the organization chart, communication
- **SHARED VALUES** - the goals shared by organizational members
- **STYLE** - the cultural style of the organization management
- **STAFF** - the type of functional specialist employed
- **SYSTEMS** - the nature of proceduralized control processes

## Motivation to innovate by Drucker:

- **Motivation inside the organisation:**
  - 1. Unexpected events - success, failure, competitor
  - 2. Collision between economic values
    - Collision between expected and achieved reality
    - collision between expected and real values
  - 3. Innovation coming from the change in production process
  - 4. Change in the industry structure
- **Motivation outside the organisation:**
  - 5. Demographic changes
  - 6. New attitudes
  - 7. New scientific and non-scientific knowledge

## Idea Sources and Generating ideas

- Ideas can come from **many sources**, i.e.:
- **internal** - R&D, suggestions from employees on modifications to current products, quality circles
- **external** - benchmarking, customers and suppliers, marketing information, competitors, complaints from current customers, scientific literature, research and education institutes
- **Generating ideas** - ability to create ideas that are brand new or new to the author
  - Methods that support creativity and intuition:
    - brainstorming,
    - brainwriting 635,
    - Synectics: dandelion - parachute
    - Panel discussions
  - **Methods of systematic and analytical approach**
    - Morphologic analysis
    - Functional analysis - new way of providing the function

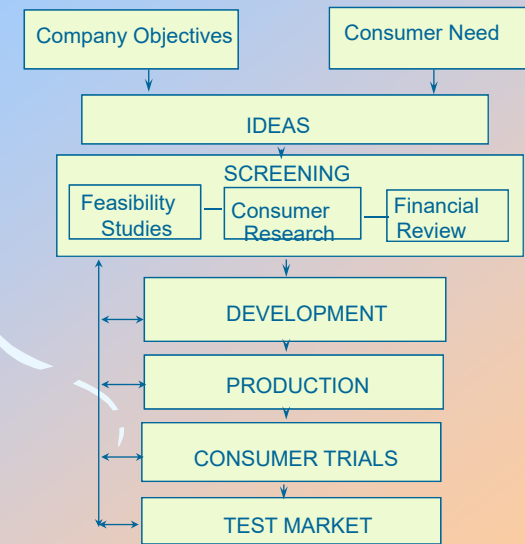
## Innovation program

- **Strategic plan of organization**
  - Pipeline full with new products
  - Process formalized in innovation programs
- **Innovation program consists of:**
  - definition of goals
  - Specification of major stages in progress
  - Allocation of sources
  - Time-plan
  - Organization outline and support of the program
  - Budget
- **Innovation programs require teamwork and they are elaborations of several functional company strategies**
  - product-engineering
    - **What** products should we offer? What consumer needs and wants we will meet?
  - Marketing and sales
    - **For whom** do we create the products? What are the target groups of customers and target markets?
  - production-technology
    - **How** will we create the products? What technologies are needed?

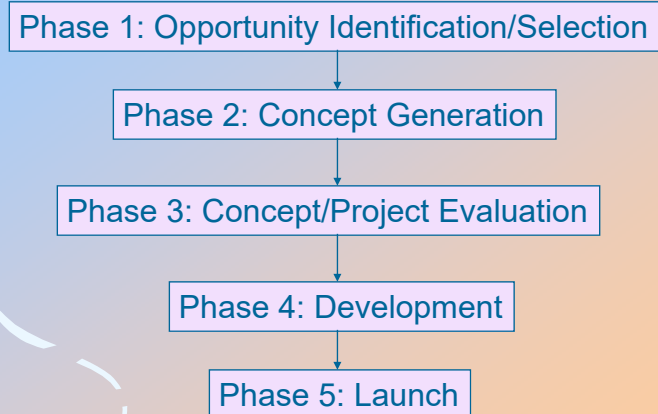
## Phases of innovation process

- Phases of innovation process from macro-economy perspective:
  - science
  - research
  - development
  - production
  - exploitation
- Phases of innovation process from company perspective:
  1. Idea generation
  2. Idea screening
  3. Concept development and testing
  4. Marketing strategy development
  5. Business analysis
  6. Product development
  7. Market testing
  8. Commercialization - launch

## Product innovation process PHASES IN CONSUMER PRODUCT DEVELOPMENT

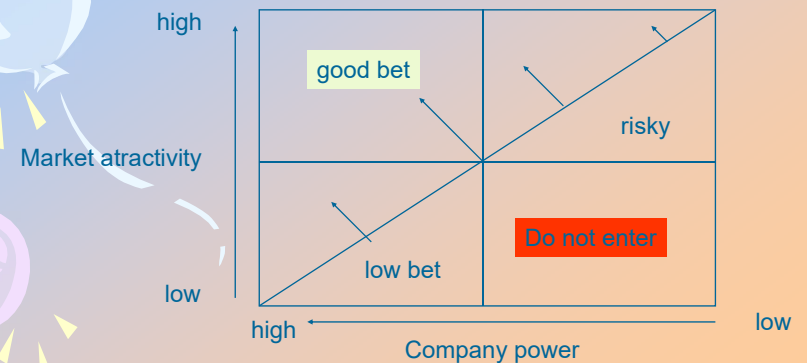


## Product innovation process The Basic New Product Dev. Process



## Opportunity matrix

- Opportunity area for new products introductions
  - Evaluate 2 marketing aspects:
  - Identify the opportunity and evaluate the size of the opportunity



## Product innovation process

### New Product Development Process



## Phases of innovation process

- 1<sup>st</sup> phase: idea generation and retrieval of primary and secondary data to create new opportunities
  - **What products is the company interested in?**
  - **What markets does the company want to enter?**
  - **What customers needs and wants does the offer respond to?**
- Sources of Ideas
  - internal - external
  - primary - secondary

## Phases of Innovation Process

- 2<sup>nd</sup> phase: idea screening – critical selection of potential ideas for further elaboration in line with set of criteria

- **Appeal for the market**
- **Objective and resources of organization**
- **Competences to develop new product**
- **Ability to produce**
- **Market size**
- **Scoring models – set of selected criteria, points evaluation of different ideas**

## Phases of Innovation Process

- 3<sup>rd</sup> phase: Concept design and testing
  - **Selected ideas are worked out into the concept**
  - **Clear and detailed product description**
  - **Reflects customers needs**
  - **Aim: low cost test to identify customers benefits and primary advantages of the product**
  - **Concept testing on target group of consumers**

## DEFINITION of a CONCEPT

### A Concept Is....

A printed or filmed representation of a product or service. It is a promise a product makes to resolve an unmet consumer need, the reason why it will satisfy the need, and a description or portrayal of any key element that will affect the perception of the product.

Translation: "What's in it for me, the consumer, and why should I believe it?"

## BASIC KINDS OF PRODUCT BENEFITS

- **functional benefits describe the product advantage in objective terms**
  - Product Performance
  - Superior, fresher, protects, etc.
- **emotional and selfexpression benefits describe the product in subjective terms**
  - Personal value
  - Pride, confidence, less hassle, etc.

## Phase 3: Concept/Project Evaluation

- Evaluate new product concepts (as they begin to come in) on technical, marketing, and financial criteria.
- Rank them and select the best two or three.
- Request project proposal authorization when have product definition, team, budget, skeleton of development plan, and final Product Innovation Charter

## Phases of Innovation Process

- 4<sup>th</sup> phase: marketing strategy development
  - goal: prepare product launch with help of marketing tools
  - 3 major parts:
  - Define target market
  - Prepare long-term sales and profit plan
  - Distribution channels strategy, price strategy, marketing communication proposal



## Phases of Innovation process

- 5<sup>th</sup> phase: business analysis/strategy
  - Work out clear and detailed project plan
  - Framework plan of production activities
  - Framework plan of marketing activities
  - Estimation of minimum and maximum sales
  - Analysis of repeated sales
  - Estimation of expected cost and profit
  - strong cooperation of R&D, production, finance and marketing
- 6<sup>th</sup> phase: product development
  - Product becomes physical
  - Versions are tested and validated
  - result: tested prototype or working model
  - Develop technical project, process flow sheet that indicates each step in the process, conditions for each step in the process, detailed time-plan, material flow

## Phases of Innovation Management

- 7<sup>th</sup> phase: product testing
  - Complete product testing, rigorous and long to thoroughly test the product: performance, safety, convenience of new product
  - Testing in own testing lab, certification
  - Field test: Customer perception, cost
  - Consumer preference test, price test, taste test, brand test
  - Zero production series, test sales
  - Return of cost, detailed value analysis
  - Achievability of planes
- 8<sup>th</sup> phase: product launch on the market - commercialization
  - Develop marketing plan –marketing mix
  - 4 major questions:
  - When the new product should be launched on the market?
  - Where the new product should be launched?
  - Who is the target group of consumers?
  - How should the company launch the product?

## Phases of Innovation Process

- 8<sup>th</sup> phase: product launch – commercialization
  - Marketing goals:
  - Sales volume per year
  - Market share
  - Profitability
  - Starting point: situational analysis on the market
  - Selection of innovation strategy – targeting, positioning the products on certain consumer segments, specify customer and company value, define desired product features and characteristics
  - Warranties, repairs, replacement parts
  - Product adoption process: AIDA
- Individual innovation processes depend on:
  - Product character
  - Traditions and customs
  - Company strategies
  - Actual market situation
  - Market position of the company

## New products success characteristics - by Rogers :

- Relative added value vs. Former product
- compatibility with existing values
- Low complexity of technical solution to the user
- Possibility to test for the consumer
- Visibility of innovation results

# Innovation success measurement :

- ROTHWELL "the criterion for succes is comercial... a succes being defined as an innovation which obtains a worthwhile market share and profit and a failure being defined as an innovations which fails to achieve this
- Success criteria:
  - Net financial income: profit, profitability, return on investment
  - Market share
  - Link with company strategy
- Success criteria by Nyström and Edvardsonn
  - Technology success
  - Market success
  - Commercial success

# Innovation Strategies

- There are 5 basic types of Innovation Strategies:
- 1. Progressive technical solution
  - Products are build on the basis of the latest scientific and technical knowledge
  - it is risky, costly and it is difficult to predict consumer interest due to underevaluated marketing activities
- 2. Balanced strategy
  - Balance between latest scientific and technical trends application and marketing activities focused on finding unmet customer needs and wants and new product launch
  - Brings the best results and is most sucessfull
- 3. Verified technical approaches
  - Me-too strategy, focused on easy and verified technical solutions
  - Nearly no resources given to R&D

# Innovation Strategies

- 4. Conservative low budget strategy
  - Copy the leader, new products are in line with company skills, they are small improvements of old ones, for well-known markets
  - Slightly positive results, without risks, profitable for the companies with strong marketing skills in slowly growing industries
  - When dramatic change happens – unable to react quickly
- 5. Diversified high budgets
  - New products development is isolated, without coordination, costly, without internal synergies
  - Absence of market understanding: respecting needs
  - The least sucessful from all strategies

# How to enter the market with new products

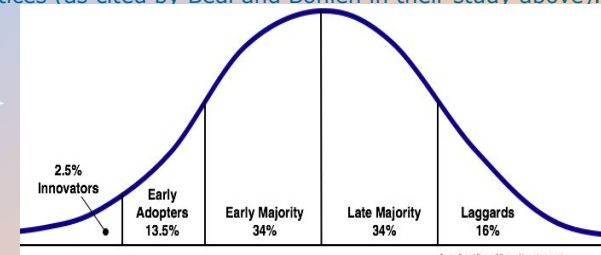
- Strategy of new product market launch is based on
  - Market dimensions
  - Technical solution of new product
- 1. New for the world solution – never used technical solution
- 2. New market for the company
- 3. Verified technical solution
- 4. Verified and well-known market
- Market entry strategies for the strategic products should be focused on the areas with known market characteristics and technical solution.

# Market entry strategies

	Verified technical solution	Solution known, but New to the company	New original solution
New unknown Markets entry	Joint venture	Capital share Cooperation Technology purchase	Capital share Cooperation Technology purchase
New known Markets entry	Internal preparation of market entry Acquisition Joint venture	Internal cooperation Acquisition Licence purchase	Capital share Cooperation Technology purchase
Old market entry	Internal preparation of market entry acquisition	Company R&D Acquisition Licence purchase	New type Joint venture

# Diffusion of Innovations (Everet Rogers)

- The **technology adoption lifecycle model** describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups. The process of adoption over time is typically illustrated as a classical normal distribution or "bell curve." The model indicates that the first group of people to use a new product is called "innovators," followed by "early adopters." Next come the early and late majority, and the last group to eventually adopt a product are called "laggards."
- The **demographic and psychological** (or "psychographic") profiles of each adoption group were originally specified by the North Central Rural Sociology Committee, Subcommittee for the Study of the Diffusion of Farm Practices (as cited by Beal and Bohlen in their study above).



# Diffusion of Innovations (Everet Rogers)

- The report summarised the categories as:
- innovators** - had larger farms, were more educated, more prosperous and more risk-oriented
- early adopters** - younger, more educated, tended to be community leaders
- early majority** - more conservative but open to new ideas, active in community and influence to neighbours
- late majority** - older, less educated, fairly conservative and less socially active
- laggards** - very conservative, had small farms and capital, oldest and least educated
- In this book, *Crossing the Chasm*, **Geoffrey Moore** proposes a variation of the original lifecycle. He suggests that for discontinuous or disruptive innovations, there is a gap or chasm between the first two adopter groups (innovators/early adopters), and the early majority.

# Revised technology adoption lifecycle (Geoffrey Moore)

- In *Crossing the Chasm*, Moore begins with the **diffusion of innovations** theory from **Everett Rogers**, and argues there is a chasm between the early adopters of the **product** (the **technology** enthusiasts and visionaries) and the early majority (the pragmatists). Moore believes visionaries and pragmatists have very different expectations, and he attempts to explore those differences and suggest techniques to successfully cross the "chasm," including choosing a **target market**, understanding the **whole product** concept, **positioning** the product, building a **marketing strategy**, choosing the most appropriate **distribution channel** and **pricing**.
- Revised technology adoption life cycle**
- Crossing the Chasm* is closely related to the **Technology adoption lifecycle** where five main segments are recognized; innovators, early adopters, early majority, late majority and laggards. According to Moore, the marketer should focus on one group of customers at a time, using each group as a base for marketing to the next group. The most difficult step is making the transition between visionaries (early adopters) and pragmatists (early majority). This is the chasm that he refers to. If a successful firm can create a bandwagon effect in which the momentum builds and the product becomes a de facto standard.
- However, Moore's theories are only applicable for disruptive or discontinuous innovations. Adoption of continuous innovations (that do not force a significant change of behavior by the customer) are still best described by the original Technology adoption lifecycle. Confusion between continuous and discontinuous innovation is a leading cause of failure for high tech products.

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## ELEMENTS ESSESTIAL to a CONCEPT STATEMENT

- Product name and clear product description
- Headline
- Accepted Consumer Belief
- Benefit
- Reason to Believe



## Concept Development & Testing

1. Develop Product Ideas into Alternative Product Concepts



2. Concept Testing - Test the Product Concepts with Groups of Target Customers/Prospects



3. Choose the Best One