Innovation Development Presentation and Promotion

Innovation Management

Course Descriptors

Course title:	Innovation Management
Course unit code	
University delivering the course:	

Learning outcomes of the course unit

Innovation Management Core Learning Goals

1. Obtain the complete review of innovation types, innovation processes and resources of innovation ideas;
2. Define, analyse and critically evaluate the characteristics of the success criteria of propositions;
3. Negotiate the adoption of innovative propositions within business and corporate scenarios;
4. Manage resources to achieve innovative results;
5. Understand innovation as a core business process and how innovation can be managed;
6. Distinguish some key characteristics of successful innovation and successful innovators;
7. Understand innovation opportunities and challenges
8. Identify and develop innovative business and corporate opportunities;

On successful completion of the module, students will be able to:

1. Learn approaches to the problem solution from the problem definition, through selection of a

solution method up to the evaluation of the solution fruitfulness;
2. Implement in practice the process of evaluation of a company's innovation activities and to propose an improvement of individual aspects;
3. Employ co-operative and synergistic approaches to team work, problem solving and opportunity development;
4. Employ critical judgement, select tools, methodologies, key theories and critical discourses which are appropriate to particular innovative ideas;
5. Utilise creative risk taking and experimentation, learn from failure and understand the implications of the actions;
6. Present information, convey messages and argue a position using appropriate media to achieve acceptance of a proposition;
7. Understand the major tools that are used increasingly to assist innovation management, both at the project level and at the level of organisational development;
8. Understand the central role of learning in innovation and in innovation management.

Course contents

Course Unit 1. Innovation management, innovation process, creativity: basic concepts, interconnections and organizational aspects

Topic 1.1. The subject and essence of innovation management (lecture, seminar, business game)
Seminar and practical assignment: Start-up innovation strategy formulation

Topic 1.2. Main stages of the innovation process and their characteristics (lecture, seminar)
Seminar and practical assignment: Models and stages of innovation processes

Topic 1.3. Methods of searching for innovative ideas (lecture, seminar)
Seminar and practical assignment: New product idea and concept development. Commercialization of innovation

Topic 1.4. The organization of creativity as a process (lecture, seminar, group projects and their presentations preparation)
Seminar and practical assignment: Organizational and economic conditions to ensure the implementation of innovations

Course Unit 2. Innovation activities: financing, organization, legal support

Topic 2.1. Forms of innovation activities at the enterprises (lecture, seminar, business game)
Seminar and practical assignment: Selecting priority areas of innovation

Topic 2.2. Various organizational forms of innovative enterprises and their action strategy. (lecture, seminar, business game)
Seminar and practical assignment: Experience of managing innovations in the Developed Countries

Topic 2.3. State regulation of innovation activities (lecture, seminar, business game)
Seminar and practical assignment: The essence of the legal regulation of innovations

Topic 2.4. Evaluating the innovations efficiency (lecture, seminar, business game)
Seminar and practical assignment: Innovation as a source of efficiency

Topic 2.5. Sources and mechanisms of innovation activities funding and financing (lecture, seminar, discussion on practical example)
Seminar and practical assignment: Evaluating the efficiency of investments in innovation project

Recommended or required reading

Main:

1. Rick Eagar, Frederik van Oene, Charles Boulton, Daniel Roos and Cindy Dekeyser. "The Future of Innovation Management: The Next 10 Years", 2011 // Electronic resource. Mode of access: http://www.adl.com/uploads/tx_extprism/Prism_01-11_Innovation_Management_01.pdf
2. Peter Merrill Innovation generation: creating an innovation process and innovative culture, 2008 // Electronic resource. Mode of access: http://books.google.com.ua/books?id=4WBpKMnbOJgC&pg=PA39&dq=innovation+process+stages&hl=ru&sa=X&ei=Z7nNUo_eKsap4AT5goHIAw&ved=0CC8Q6AEwAA#v=onepage&q=innovation%20process%20stages&f=false
3. Managing Creativity and Innovation (Harvard Business Essentials), Boston, Massachussetts, 2003 // Electronic resource. Mode of access: http://www.amazon.com/Managing-Creativity-Innovation-Business-Essentials
4. Corporate strategy. SAGE library in Business and Management //Editor Jeffrey A Krug. / James Neelankavill, Roger Bennett, Dan Kipley, Alfred Lewis, Harvard Business R. SAGE Publications, 2008.– 1176 p.
5. Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, 6th ed. OECD Publishing, 2002. – 256 p.
6. Peter Drucker Innovation and Entrepreneurship // Electronic resource. Mode of access: http://ua.bookfi.org/book/1303970
7. Glossary Venture Entrepreneurship // Electronic resource. Mode of access: http://www.allventure.ru/ucheb/20/#replies_page1

Additional:

1. Wouter Koetzier, Christopher Schorling 5 Key Points to Consider when Developing an Innovation Strategy // Electronic resource. Mode of access: http://www.innovationmanagement.se/2013/07/03/5-key-points-to-consider-when-developing-an-innovation-strategy
2. Marian Underweiser, Richard M. Ludwin, Marc A. Ehrlich Understanding the Innovation Cycle Electronic resource. Mode of access: http://www.thersa.org/__data/assets/pdf_file/0020/126542/IBMinnovationcyclesfinal.pdf
3. Roberta B. Ness (2012) Innovation generation: How to produce creative and useful scientific ideas. Electronic resource. Mode of access: http://books.google.com.ua/books?id=OFeCxfIZgn0C&printsec=frontcover&dq=generation+of+idea&hl=ru&sa=X&ei=0b7OUoWTB-jl4QS6qYHgDQ&ved=0CFkQ6AEwBg#v=snippet&q=generation%20of%20idea&f=false

Internet based materials:

1. http://www.nvca.org/
2. http://www.evca.eu
3. http://innopolis.info/
4. http://www.unctad.org/
5. http://www.managing-innovation.com/

Planned learning activities and teaching methods

The primary means of learning for student is through practice. This is supported and developed

through:

1. Lectures, seminars, business games;
2. Unit and project briefings;
3. Set and self initiated project briefs;
4. Peer learning;
5. Self and peer assessment;
6. Guest speakers;
7. Group discussions, reviews and critiques;
8. Working on live projects;
9. Mentoring;
10. Independent study.

For distant learning

Web-based sessions lead by instructor provide methodological and conceptual framework for students' learning. All the slides and materials from the class will be available electronically.

Web-based seminars will be used to strengthen the knowledge of newly learned methods and concepts, and to explore their application to particular complex business cases.

Students are encouraged to ask questions and discuss the material in "live" mode online. There will be a web-based message board for the course. Students are welcome to post questions on this board and these discussions will be monitored and facilitated by the lecturer.

The main accent will be made on independent learning

Assessment methods, criteria and regime

Progress and learning is assessed not only at the end but throughout the entire course. Evidence of an ability to think through and critically analyse challenges will be highly rewarded in the assessment.

Students' grades will be determined by individual **Assignments**, based on description of the key idea, normative regulation and steps necessary to build innovation pipeline and supply it with ground-breaking ideas in their country.

The relative weight of **Assignment Brief** will be set at 100%. It will be marked on the basis of formulated aims and objectives (20%), described innovative product concept and implementation strategy (10%), clear discussion on the new product (service) (40%), solid discussion of the normative and legislative steps to be done (20%) and quality of reference list and bibliography investigated for this proposal (10%).

Skills and Personal Development Plan Statement

Innovation Management course provides the opportunity for students to:

1. Get fundamental knowledge of the phenomenon of innovation and innovation processes from the perspective of firms and industries;
2. Use basic theoretical tools that help analyze and manage real-world processes of innovation;
3. Appreciate the importance of understanding innovation-related issues for the development of businesses, industries, countries and citizens;

4. Expand the Innovation Management perspective to include design as integral to the innovation process and as a practical approach to product/service development;
5. Graduate with a truly global perspective of Innovation Management;
6. Get skill sets that can be applied in both larger multinational organisations, and small businesses;
7. Develop research capabilities with an increased understanding of activities inputting into the innovation process.

Teaching and learning materials

Contents

Course Unit 1. Innovation management, innovation process, creativity: basic concepts, interconnections and organizational aspects

Topic 1.1. THE SUBJECT AND ESSENCE OF INNOVATION MANAGEMENT

Basic concepts of innovation management. Innovations classification. Key trends in successful business model innovation in the future.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish basic concepts of innovation management
2. Determine key trends in successful business model innovation

Key words: *business environment, customer base, innovation, frugal innovation, integrated innovation, marketing strategy implementation, new product development, product adaptation, socio-economic impact, technology*

Innovations are an important factor of success in a competition which is getting increasingly intense. Only those who are able to invent themselves over and over again and thus gain new competitive advantages will be able to survive in the long run. This is true for companies, organisations, teams, employees and countries. Today there is more and more discussion about the necessity for innovation in companies, which is subject to various factors. Few markets are stable and four main factors (*see* Figure 1.1.1) create the need for innovation: *technological advances, changing customers, intensified competition* and *changing business environment*.

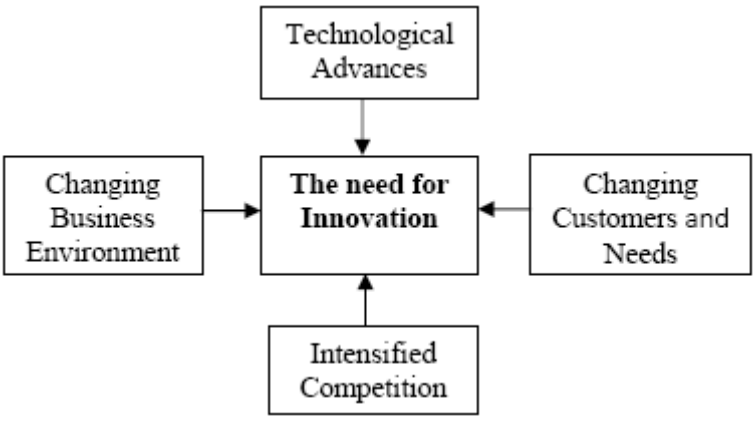

Figure 1.1.1. Drivers of the Need for Innovation

1. **Technological Advances.** There are numerous examples of new technologies having a major influence on business. For instance, nanotechnology is increasingly being used in products, such as “easy to clean” surfaces. New technologies often create new industries and both biotechnology and multimedia have created significant employment over the past decades. In addition, new applications of established technologies are constantly emerging. With the vast array of technological developments, even multinational companies that used to conduct all their

own basic research cannot keep abreast of all of the developments, using internal resources alone. Organizations need to monitor the progress of both the technologies they currently use and also that of potential substitutes.

2. **Changing Customers and Needs.** Demographics show that many markets will evolve. The earnings in many newly industrialized countries will soar and demand for particular products and services will develop. Changing customers also means that traditional market segments are disappearing or fragmenting and companies will need to adjust their product ranges accordingly.

3. **Intensified Competition.** Companies may also face competition from sources normally outside their industries.

4. **Changing Business Environment.** Business environments change and are always subject to change – sometimes gradual and sometimes radical.

Gradually markets have become more open as the market economy has been embraced by most governments. A gradual reduction in the resources required for key business processes has been achieved. A continued focus on efficiency gains will bring only diminishing returns and cost-reduction myopia needs to be replaced by a focus on increasing revenues and profits through new products and services.

Economic cycles have a radical impact. Downturns drive many companies to cut their investments in innovation but the winners which emerge have continued to invest.

There are many misunderstandings about what innovation, in a business context, truly is. Innovation should not be restricted to:

- ✓ Big ground-breaking ideas or technological leaps forward.
- ✓ Creative jumps of the imagination which cannot be planned or prepared for.
- ✓ The R&D department or the “creative types” in marketing.
- ✓ Creativity “workshops”.
- ✓ Product based companies.

The term “Innovation” seems to derive from the Latin *novus*, which means new or young or novel. Too many companies focus on just one area of innovation management – typically ideas generation – although there are other aspects of innovation management that are equally important. There are different definitions of the term *“Innovation”:*

- ✓ a new idea, for others it means an invention (a materialized new idea);
- ✓ a new product (a developed invention);
- ✓ the act of creating a new product or process;
- ✓ to create a new business.

Innovation is the application of better solutions that meet new requirements, inarticulated needs, or existing market needs. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments and society. The term innovation can be defined as something original and, as consequence, new that “breaks in to” the market or into society.

Innovations result from ideas, if they are implemented in new products, services and processes, which find real usage and thus penetrate the market. Commercial success in the future will therefore depend mainly on the companies’ abilities to create new products, ideas and processes or take up innovations quickly.

Innovation = ideas + new products/services + market implementation

Innovations do not always have to be completely new ideas. The term innovation rather means the implementation of something new and results in a noticeable improvement for the user. They are characterized by a special characteristic, clear originality and a noticeable user benefit. Innovations are as a result qualitative new products, services, processes, structures, markets and cultures. Innovation is an opportunity for something new, different. It is always based on change. Innovators do not view any change as a threat but as an opportunity.

Comparing the various definitions of innovation, it can be seen that there are several common elements *what* is changed (such as product or process changes); *how much* is changed (whether it is completely new or only perceived as such); the *source* of the change (sometimes technology); the *influence* of the change (for example, its social or commercial value).

There are different approaches and features of the classification of innovation. Their critical analysis and synthesis allowed to create a classification system that contains classification features and selected according them types of innovations (*see* Tables 1.1.1, 1.1.2).

Table 1.1.1

A typology of innovations

Type of innovation	***Example***
Product innovation	The development of a new or improved product
Process innovation	The development of a new manufacturing process
Organisational innovation	A new internal communication system; introduction of a new accounting procedure
Management innovation	TQM (total quality management) systems; BPR (business process re-engineering); introduction of SAPR3 (SAP is a German software firm and R3 is an Enterprise Resource Planning (ERP) product.)
Production innovation	Quality circles; just-in-time (JIT) manufacturing system; new production planning software, e.g. MRP II; new inspection system
Commercial/marketing innovation	New financing arrangements; new sales approach, e.g. direct marketing
Service innovation	Internet-based financial services

Now is considered that there are 5 innovation management concepts as being important for the years ahead:

1. Customer-based innovation. Customer-based innovation' is all about finding new and more profound ways to engage with customers and develop deeper relationships with them. It based on:

- *Total customer experience* driven by a desire to build a deeper relationship with the customer.
- *Design-in emotion:* The second trend emerging in this space is the realization that, as technology allows manufacturers to deliver as much and often more functionality than the typical consumer can use, the bases of competition will change. Rather than compete on yet more features and functions we will see manufacturers compete even more on

style, on design and on emotional connection, with approaches used in the luxury and fashion markets being increasingly adopted in more traditional sectors.

- *Social networking:* The third converging trend is closely linked, i.e. the use of social networks to underpin companies' propositions and relationships with their customers.

Table 1.1.2

A classification of innovations

Classification's features	***Type of innovations***
Subject matter of innovations	Product innovation
	Process innovation
	Management innovation
	Commercial/marketing innovation
Field of operation (activity)	Production innovation
	Commercial/marketing innovation
	Social innovation
	Ecological innovation
	Legal innovation
Degree of novelty	Radical innovation
	Incremental innovation
	Systemic innovations
Scale of novelty	New for enterprise
	New for branch
	New for country
	World novelty
Addressee innovation	Producer
	Consumer
	…
	Society
Kind resulting effect	Scientific and technological effect
	Economic effect
	Social effect
	Ecological effect
	…
	Integral effect
Degree of physical tangibility	Product innovation
	Process innovation
	Objects of intellectual property

2. Proactive business model innovation. A business model defines how to create and capture value within a value chain, considering both operations and strategy. Business model innovation as a concept is certainly nothing new, but there is still much to be done to develop a convincing innovation management approach that is sufficiently systematic and repeatable to generate new, innovative business models.

There are three key trends in successful business model innovation in the future:

- *Deliver "thick value":* Today business still often focuses on the creation of "thin value", i.e. purely profit-driven transactions between the organization and its stakeholders, as opposed to "thick value", which considers more lasting stakeholder value, for example

increasing the resilience of stakeholders in the face of global societal and economic pressures such as climate change, demographics or energy security. As part of the business model innovation process, organizations will need to identify new types of thick value – purpose-driven stakeholder transactions – to fill unarticulated needs both meaningfully and profitably.

- *Modular approaches:* Companies will increasingly need to take a modular approach to business models – innovating so that different modules can be used as building blocks in a range of market environments, each supporting the overall strategy of the company.
- *More market adaptation:* There is an important need for companies to find better ways to generate innovative business models proactively to meet the needs of new markets, or to respond to new developing world competitors.

3. Frugal Innovation. Frugal Innovation is about originating and developing innovations in lower-income, emerging markets, taking the needs of poor consumers as a starting point, then transferring, adapting, applying and distributing them in developed markets. Frugal innovation brings about a rethinking of the nature of innovation. Instead of "more" it is often striving for "less", using clever technology to create masterpieces of simplification in mobile phones, computers, cars and financial services. Frugal innovation clearly is not just about innovating products, often changes in the whole supply chain are involved.

4. High Speed/Low Risk Innovation. One aspect that is set to become increasingly critical is the importance of getting to market not just fast, but also accurately and without flaws. So that is expected to see further development of approaches and tools to drive fast, de-risked product and service innovation.

5. Integrated Innovation. Integrated Innovation is about taking innovation approaches that were once the domain of New Product Development (NPD) only – such as idea management, stage gates and portfolio optimization – and applying them consistently as an integral part of business strategy to achieve not only growth but also competitiveness.

Topic 1.2. MAIN STAGES OF THE INNOVATION PROCESS AND THEIR CHARACTERISTICS

The concept of goods innovation life cycle. Analysis of the main stages of the innovation cycle. Generation of ideas. Selection of ideas. Development of ideas and their verification. Forecasting market-commercial innovations. Product development.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the main stages of the innovation cycle
2. Know how to develop and test innovation in market conditions

Key words: *innovation process, idea, innovative product concept*

In relation to the life cycle of a new product the general scheme of the full innovation cycle is presented in Figure 1.2.1. Let us examine them in more detail.

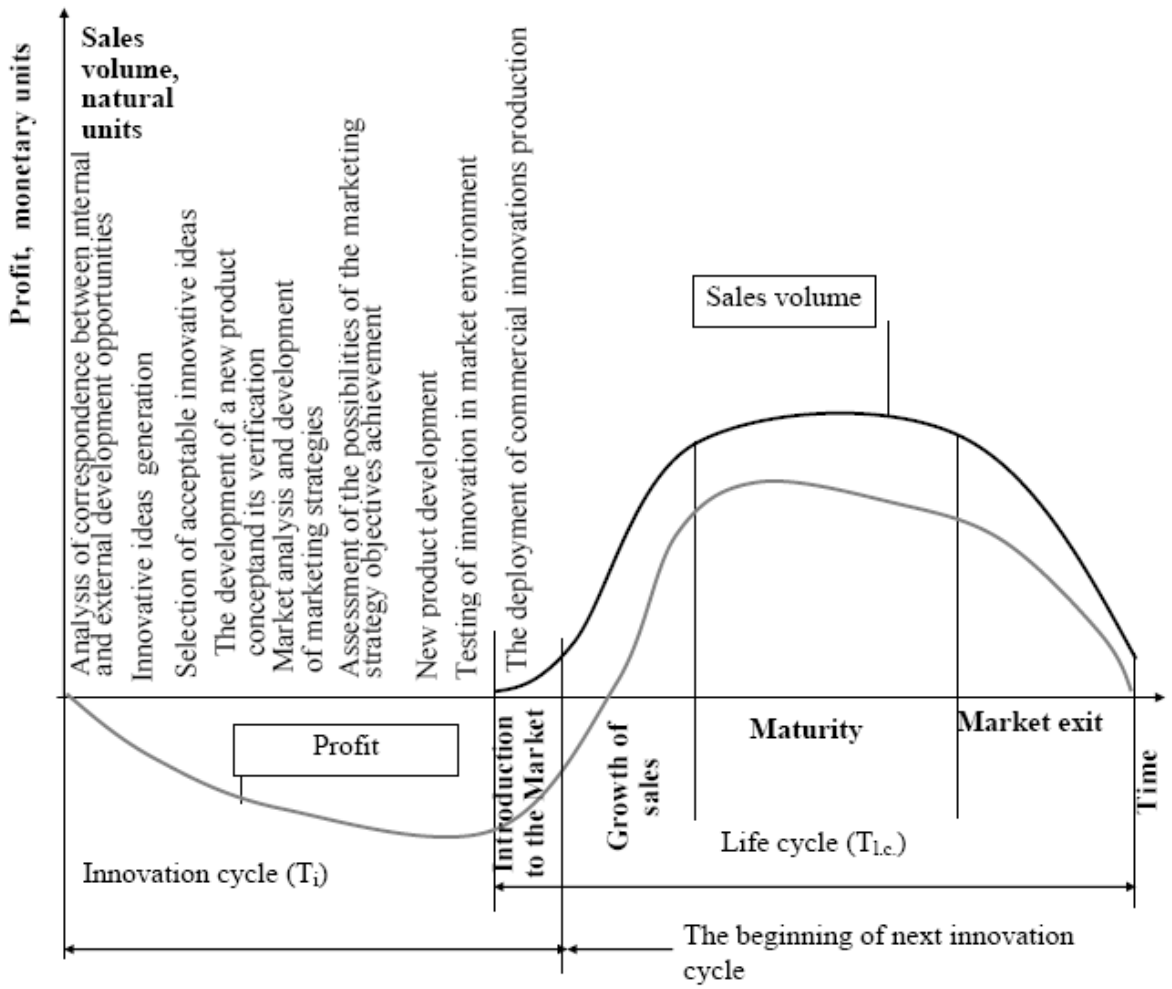

Fig. 1.2.1. The Innovational and life cycles of the product innovation

Analysis of correspondence between internal and external development opportunities. To

do this market opportunities and threats should be compared with the strengths and weaknesses of the company. On this basis we can identify how the present and prospective directions and activities of the company correspond the conditions and the situation on the market. As a result, activities which should be curtailed and which are worth developing could be determined.

Assessment of correspondence of company's internal and external development opportunities generated by the market can be accomplished using SWOT- analysis.

Innovative ideas generation. The ***idea*** is a general concept of the product that can be offered on the market.

The main sources of innovative ideas are:

- analysis of consumer needs;
- sales staff and dealers of the company;
- analysis of developments in science and technology;
- development of ideas by company's own scientific and technical personnel;
- analysis of competitors activities including analysis of their promising developments;
- the results of situational and simulation modeling of the consumer behavior in the present and the future;
- an analysis of development trends in the technological, economic, social, political, cultural, legal, ecological, demographic and other components of management environment.

There are many methods for generating the innovative ideas (intuitive and ordered). The most popular among the latter are: improving the prototype, brainstorming, synectics, elimination of deadlocks, morphological maps. Any criticism of ideas is prohibited at this stage, since the purpose of the stage is to generate their greatest possible number.

The selection of innovative ideas. At this stage most appropriate ideas for a particular company should be chosen from the variety of new ideas.

The verification may be performed on the basis of:

- conformity assessment of the innovative ideas that were accepted appropriate in similar situations;
- conformity assessment of innovative ideas to predetermined requirements;
- comparison of innovative ideas according to the list of criteria and indicators and their optimal choice.

Preliminary assessment of innovative ideas involves obtaining answers to the following questions:

- the probability of existence of a future market for innovation;
- is there a technical and economic feasibility of development, production and promotion of innovations to the market;
- whether the innovation is profitable and how it will affect the enterprise?

Such evaluation is often performed using the expert method, since elements of uncertainty are very influential at this stage due to an inaccurate, incomplete and conflicting information.

Note

In Ukraine the percentage of the implemented ideas does not exceed 20 % of their whole number. For comparison, in Japan it is 68 %, USA - 52 %, Sweden - 45 %, Poland - 30%. Combined with low innovation activity of domestic producers this indicates going away from the accelerating economic prospects.

Development of the innovative product concept and its verification (concept is considered as innovation idea easily understandable for consumers). Typically, the testing of innovation plan (a new product or service) is carried out by questioning of users and analysis of the results.

Herewith the idea of the product should be considered at three levels, where each subsequent one describes a higher degree of specific innovations, and therefore the degree of elaboration and consumer appeal (Figure 1.2.2).

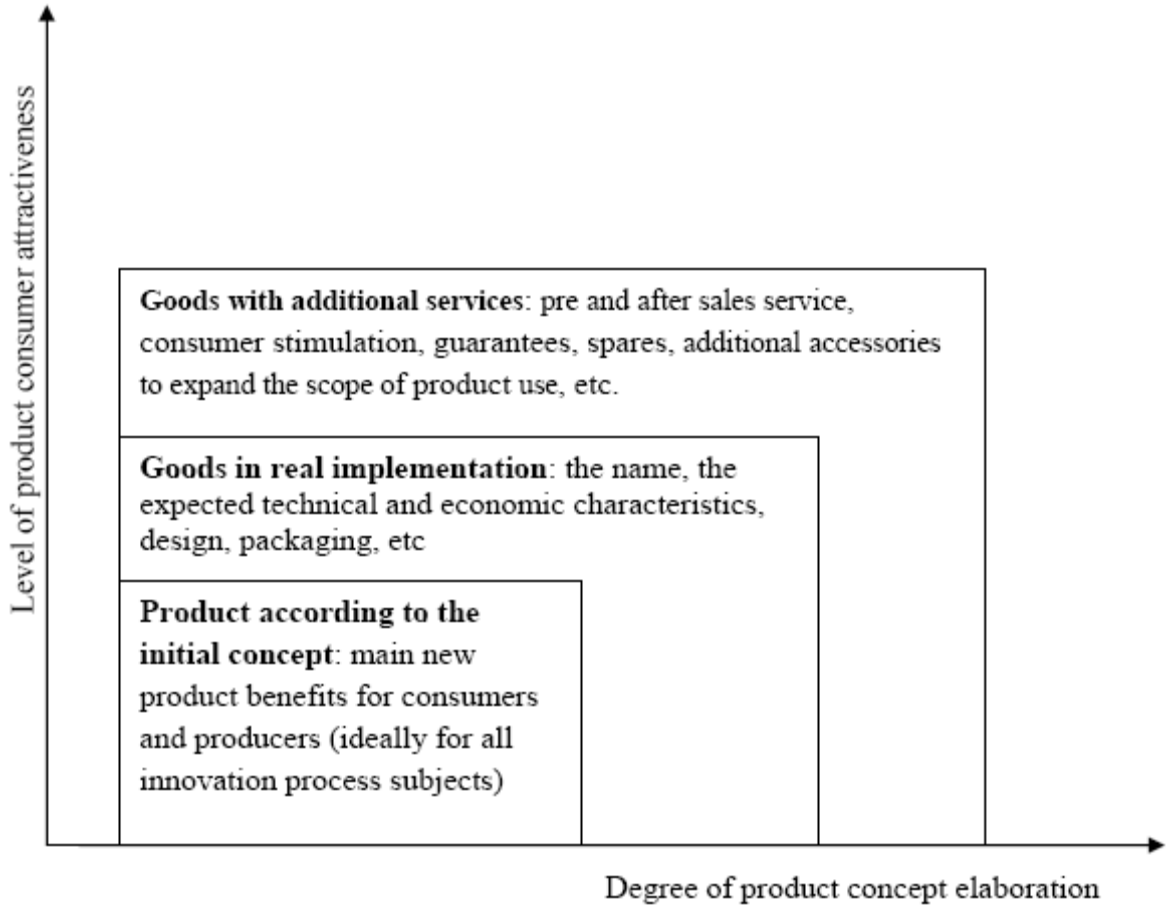

Figure 1.2.2. New product concept representation levels

Developing a marketing strategy to promote innovation to the market. It involves a serious research and leads to marketing strategy development and promotion the innovation to the market. The main tool for this analysis is segmentation.

In general, the marketing strategy includes: a strategy of formation and development of target market, product strategy, pricing strategy, products promotion strategy (including sales and goods movement), strategy of demand creation and stimulation.

Evaluation of the economic feasibility of the enterprise goals presented in the marketing program.

Evaluation is performed according to the following criteria:

- intellectual and technological capabilities of innovations implementation in the new product that meets the needs and demands of consumers;
- possibility of implementing an innovative idea into a commercial product;
- market opportunities of promoting an innovation on the market and bringing it to consumers;
- innovative project resource supply: information, raw materials, finance, etc. (existing and needed);
- sources of investment in R&D and development activities, testing, pre-production, promotion, distribution and marketing;
- risk degree and the possibility of its prevention, reduction or compensation;
- expenditures for the design, production and promotion of innovation on the market;
- profitability.

Development of design and technological innovation documentation, manufacturing of prototypes and testing.

At this stage a prototype is produced and if necessary is tested in laboratory with the following documentation specification. Based on the laboratory tests results, operating documentation will be specified (please, see above). When designing innovations to assess the possibility of its concept implementation to the new product, one can use the recommendations of J. Jones. It should be noted that computer-aided design (CAD) tools are widely used to develop the design and technological documentation including software and computer systems.

Testing of innovation in market conditions.

It is performed by test marketing. Its goal is to simulate the process of introduction and promotion goods to market in certain market areas. The results of this process will later be used throughout the entire target market.

Recently, computer modeling is used for testing the product innovations. In particular this is virtual shops where product modifications are being sold, using different versions of its design and packaging, shops showcase decoration, etc.

Deployment of commercial innovations production in the amount specified in the marketing program.

At this stage an existing market opportunities and threats, emergence of new ones and transformation of one into the other (transition of the opportunities into threats and backwards) should be constantly monitored.

Despite a large number of stages of the innovation process, they are certainly necessary. The cost of works at each subsequent stage is nonlinearly increase compared to the previous stage therefore the thorough elaboration of possible solutions can reduce the probability of possible adverse consequences (Table 1.2.1). Finally it should be noted that only 1 or 2 innovative ideas out of 100 reach the commercialization stage, while those which remained, have the probability of market success of 25 - 50%.

Table 1.2.1

Shares of success and failure on the stages of the innovation process[1]

Indicators	Stages				
	Ideas generation and selection	Business analysis	Product development and manufacturing	Product testing	Commercial production
The share of expenditures at the stages of typical completed project, %	7,3	3,7	22,7	18,6	42,7
Share of expenditures on product innovation both successful and not, %	14,7	6,1	36,9	16,7	25,6
Successful projects, %	34,7	45,2	52,1	58,8	66,3
Unsuccessful projects, %	65,3	54,8	47,9	41,2	33,7

[1]Langdon Moris (2011) *The innovation master plan.* Electronic resource. Mode of access: http://www.innovationmanagement.se/wp-content/uploads/2011/09/Innovation-Master-Plan_Chapter-5.pdf 137-189

Topic 1.3. METHODS OF SEARCHING FOR INNOVATIVE IDEAS

Classification and characteristics of methods for searching and generation of ideas. Prototype improvement. Brainstorming. Synectics. Elimination of the dead-lock situation. Morphological maps.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the methods for searching and generation of ideas
2. Know how to develop and test innovation in market conditions

Key words: *prototype, brainstorming, synectics, dead-lock, morphological maps*

Comparative analysis of formal methods to generate and validate ideas of innovation and recommendations for their use are presented in Table. 1.3.1.

Table 1.3.1

Comparative characteristics of methods for generation and selection of innovative ideas

The name and nature of the method	Field of application	Benefits	Disadvantages
Prototype improvement: identify prototype (the best model on the market) drawbacks and finding ways to improve it	Improving existing products: improving their design and functional characteristics, economic characteristics, etc.	The plain inheritance of the known product (if the prototype is in demand then its modification will be too)	The product is not always could be improved; minor improvements may lead to loss of competitiveness
Brainstorming: group generation of ideas to solve the problem assuming prohibition of ideas criticism, followed by their assessment	Quick generation of as great number of ideas as possible to solve formulated problems.	Speed; increased chance to find an acceptable solution; multidimensional problem analysis.	The quality of ideas is independent of the duration of its search; the results require further research
Synectics: orientation of group of professionals spontaneous intellect functioning (with various types of analogies) for the analysis and solution of the given problem	Search of general (fundamental) solution of the given problem	Allows to overcome developers preconceptions and provides innovative ways to solve problems	Requires an experienced and strong leader, careful selection of experts and their prior training
Elimination of the dead-lock situations: the search for new solutions if traditional ones are not effective.	Solving complex problems that cannot be solved by traditional methods in traditional search areas (sectors).	Allows to solve problems in a situation where there is no acceptable solution	Knowledge, experience and traditions of developers are below the level of search areas.
Morphological maps: expansion of problem solution search area	Finding solutions for new problems	Allows to quickly generate a number of possible solutions and choose the most appropriate one.	Requires developers experience and knowledge of the problem structure

Let us look into practical aspects of using these methods to design both product and process innovations.

Method of prototype improvement. The main provisions of the method we will consider using

the following example.

Example. *Estimates for groups of indicators for competing products (manufacturers of centered pumps) are shown in Table 1.3.2.*

Table 1.3.2

Comprehensive indexes of competing pumps

Producer	Index groups				
	Qualitative	**Technical**	**Service**	**Economical**	**Integral (К)**
"Nasosenergomash"	0,1500	0,1823	0,2500	0,2169	0,7992
"Livgidromash"	0,0601	0,1687	0,0500	0,4000	0,6788
"Uralgidromash	0,0844	0,1811	0,0291	0,3103	0,6049
"Kaluga Turbine Plant"	0,0828	0,1801	0,0459	0,2804	0,5892

Table 1.3.2 analysis shows that the pumps produced by "Nasosenergomash" which are better according to the integral factor, can be taken as the prototype. However, these pumps, surpassing competitors' products by groups of qualitative, technical and service indicators (although there is a backlog on some indicators within groups) significantly lose to them on the group of economic indicators. Therefore development of new improved pump system should take into account this fact. This requires concentration of efforts, especially in order to improve economic performance such as prices and energy consumption per volume of fluid unit. The first one requires finding reserves to reduce the first cost, the second shows the need of equipping pump with less powerful engine. As for technical performance it is required to reduce the size and weight of pumps.

Brainstorming. The task to offer the idea of innovation, which can be designed, manufactured and introduced to market by a particular company is set for a selected group (several groups) of professionals (usually the group includes 5-6 people or more). At the same time any criticism of ideas is prohibited even "wild" ideas accepted for consideration.

All proposed ideas should be recorded. Brainstorming requires each participant to possess profound skills and experience in a particular field of activity being analyzed. However practice shows that newcomers may also offer some interesting ideas that can be implemented. J. Jones states that a group of 6 people can generate up to 150 ideas during half an hour.

After recording the ideas their authors are invited to read the records one by one. Members of the working group listen and record their thoughts. Observed ideas and commentaries will then be analyzed and grouped and in future they serve as a basis for finding the best solution.

Synectics. This method involves search (generation) of the idea which can solve the problem (the idea of innovation) in several stages. Let us look on them in detail.

1. To choose a group of experts that will generate the idea of innovation. This group should include invited specialists in different areas of expertise and employees of an innovative enterprise (they have to represent different structural units).

2. Provide this unit with an opportunity to acquire practical skills in the use of analogies to guide the spontaneous brain activity to solve a problem or task, such as the development of innovation.

Often the following types of analogies should be considered:

- *direct* (real): for example, from biological systems: modern submarines sheathing which reduces the friction of the water and the noise made by analogy with the skin of dolphins

and other animals living in the water;

- *subjective* (corporal): for example, when a developer is trying to imagine himself as a certain product or unit, imagine what it would feel like been, for example, the wing of the aircraft, which forces would effect him in this case, etc.;
- *symbolic* (abstract), when the characteristics of certain object or phenomenon are equaled with the characteristics of the other one. In particular, a decision tree, bolt head, the noise of the ship or aircraft, etc., sound absorption, radiation trapping;
- *fantastic* (unrealistic) when things or phenomena are imagined as those required by designer, developer or researcher, although they can not be such as those inherently.

For example, a daemon that can let molecules of a certain substance to pass one by one, a giant who can move the whole building to a certain distance and etc.

3. To set a task to a new developers group which they have to complete (to find a solution to a particular problem). Mostly synectics is used to develop new products and solve problems that arise meanwhile.

Elimination of the "dead lock" situations. This method involves the generation of innovation ideas in the following ways:

1. Using the transformation rules that can be applied to poor decisions in the field of traditional search. The following transformation are acceptable: use in other way, adaptation, modification, strengthening, weakening, replacement, rebuilding, inversion, aggregation.

Example. *In the mid 90s many universities in Ukraine faced the problem of survival, because governmental funding was clearly insufficient. To overcome the crisis, a practice of preparing extramural students on contract (paid) basis was introduced. However difficult financial position of students majority prevented them from coming to the university to take exams and paying for hotel accommodation. These charges had to be paid in addition to their official education costs.*

To solve the problem inversion was used, which can be interpreted as situation reverse, i.e. the replacement of students visits to the university by university teachers visits to students. Further study of the ideas showed that the problem could be solved by creating educational and counseling centers at schools, colleges, technical schools, for example, in regional centers. A small rents allowed to set up an installation and exam sessions and hence studying directly in the cities (and other locations) where the students lived just by slightly increasing tuition fees (10-15 %). Thus, inversion of the situation allowed to solve the problem.

The basic solutions supposed to be transformed can be obtained artificially by advanced introduction of any clearly unacceptable solution.

2. **Finding new relations between the parts of the previous improper decision.** Alternatively it is possible to examine the associations that arise while pairwise comparison of the mutual relations of certain elements of a product or system.

Example. *Improvement of a table lamp design can be accompanied by an analysis of the mutual relations for the following pairs: stand - rack, rack - lighting element, lighting element - lamp shade, switch - rack; switch – stand, etc. In this case various options for the relationship of two elements will be analized, such as setting one onto/inside another, replacing one another, etc.*

3. Project situation revaluation (reassessment). Developer (designer) who is "deadlocked", records complications, and then replaces every word (or phrase) with synonymous ones.

Example. *The designer describes the complications: "Welding product casing can lead to heterogeneities of its parts strength, warping its corps and non-compliance with the preset shape and size". Replacing the words "welding product casing" by "the formation of the casing" can suggest to replace the welding process by casting.*

The use of morphological maps. Let us look at the example of the generation of innovative ideas for room heating, which would be cheap and less expensive in exploitation than existing ones, easy to use and environmentally friendly. Moreover it also have to be taken into account that Ukraine has limited oil and gas reserves but some surplus in electricity production.

Generation of innovation idea will be conducted according to the following enlarged algorithm:

- Identify the functions which an acceptable product should be able to perform.
- Show a wide range of elementary solutions on a chart i.e. alternative means of implementing each function.
- Select one acceptable elementary solution for each function.

Below is the example of using this algorithm to solve the problem (Table 1.3.3).

Table 1.3.3

Morphological map

The main parameters	**Intermediate solutions**				
	1	**2**	**3**	**4**	**5**
Air temperature	warm air from the central source	convector in the room	convector radiator in the room	source of regulated thermal radiation	other
Air circulation	natural circulation	forced circulation	natural convection	forced convection	other
Air humidity	unregulated	humidifier - vaporizer	other		
Heating element	High temperature electric heater	High temperature electric heater with an open flame	panels with low temperature fluid circulation	low-temperature heater	Surfaces heated by convection
Temperature gradient	due to the **placing** of the heating element	due to the **placing** of the heating element	other		
Heating mode	constant throughout the day	periodical turning on during the day	daytime	at night, with the periodic turning on in daytime, to maintain temperature control	other
Heat carrier	water	air	oil		other
Energy source	coal	fuel oil	gas	electricity	other

Dark shading shows the traditional centralized water heating system. Lighter shading shows innovative option. It involves the use of heating element that heats using electricity during nighttime when it is cheap. In this case the heat is accumulated in the oil cooler and is used during the daytime.

Topic 1.4. THE ORGANIZATION OF CREATIVITY AS A PROCESS

Creative initiative as an objective process of innovation development system. The emergence of creative initiatives. Obstacles to the development of innovative initiatives. The rules for transferring creative initiatives. Organization of inventive and innovative work at the enterprises.

Learning Objectives

After studying this chapter you should be able to:

1. Determine obstacles to innovative initiatives development
2. Distinguish the rules for transferring creative initiatives
3. Know how to organize inventive and innovative work at the enterprises

Key words: *innovative, organizational culture of innovation team, co-creative activity, horizontal connections, rapid cycle teams, idea incubator*

Creative initiative as an objective process of innovation development system

Creating an environment that fosters creativity at the work place is a crucial part of the innovation management. Such an environment contributes to generation and creation of innovative ideas. The creative environment requires support of the so-called *innovative climate* that follows a special corporate culture on the micro-level and is also a part of micro-environment in a company. *Innovative climate* is defined as the working conditions established during a certain period of time that contribute to fostering the creativity environment, the changes and innovations.

Organizational culture of such a team is an integral characteristic that includes the system of values, behavioral modes of employees, management type, the features of control system, assessment modes and motivation system.

Creativity inspires and leads to emergence of innovations. *Creative people* have the following distinct features:

- Flexible thinking;
- Nontrivial approach;
- Curiosity;
- Insistence;
- Goal-oriented in problem solving.

Individuals as well as successful companies or project teams might have the feature of creativity competence. The key *elements of creative companies* are:

- Flexibility of organizational structures;
- Well-coordinated teamwork;
- Loosen allocation of responsibilities;
- Employees' substitution;

- Teamwork in generation of goals and problems.

Such companies do not criticize for the mistakes, since trials and errors contribute to the employees' capability to constantly search for new ideas.

The common management principles of such companies include team-orientation or business-process. They lack rigid hierarchy and have fewer management levels in comparison to the typical organizational structure based on bureaucracy principles.

Informal leadership is of great relevance at these companies. The leader in such a team is rather a mentor than a formal head of organization. An effective leader helps the team members to fulfil their potential by the right motivation to achieve goals, using financial and other motivation tools.

An *initial stage of innovation process* is the *search for ideas*. In order to enjoy fully the innovation potential, a company has to foster an environment, in which its members feel the support of the senior management for any new innovative ideas regardless their seemingly trivial or inadmissible nature.

Favorable innovation climate presumes the creation of the environment of trust. It also includes the process of identifying and overcoming of those factors that "block" creative efforts. Furthermore, it requires the cooperation in searching activities of staff members, the enlargement of innovators' powers at the working place, the employment of organizational and psychological tools that help to generate new ideas.

An innovation-oriented company with the well-developed management culture always keep expanding the range of intellectual activities, encourage the active emergence of ideas, including those very diverse and uncommon. Therefore, the main task of the leader is to identify talented people, to foster conditions for their activity and to remove the impediments for creativity's growth.

The emergence of creative initiatives

An idea is the beginning of the innovative entrepreneurship. The driving forces for the emergence of innovative idea are the knowledge of staff members, personal or professional experience, insights, perspectives of employees and the capacities to implement all of those in reality.

The process of an innovative idea formation, which might lead to a business success, requires :

- Finding out the way of the utility creation that is valuable for consumers;
- Creating the mix of particular features that ensures the emergence of a given utility;
- Creating a unique formula that helps achieving the maximum profit.

The examples of *sources of innovative ideas include*:

- Consumers as subjects of consumer studies;
- Researchers who are working on innovation or searching new materials; as well as a product's features that have the potential of new products or services;
- Competitors as subjects of their own strategies, and activities related to consumer studies and created innovations;

- Sales forces, dealers, and other intermediators;
- Company employees (the emergence of innovative ideas requires the involvement of as many employees as possible).

According to P. Drucker, the sources of opportunity that ultimately drive innovation are:

- ✓ The organization's own unexpected event like successes, failures, or other external event;
- ✓ Incongruities, that is the discrepancies between the reality as it is and our perceptions ("the reality as it should be");
- ✓ Process needs (they imply elimination of shortcomings);
- ✓ Changes in industry and market structures;
- ✓ Changes in demographics;
- ✓ Changes in meaning, perception, or peoples' values;
- ✓ New knowledge, both academic and non-academic.

Business development involves not only the scheduled collective work of researchers and inventors engineers, but also the intuitive insights of individual co-workers. Creative ideas are not meant for planning or logic deduction from the previous practice, since their basis lays in the breakthrough logic. In the beginning, such ideas lack clarity, they are hard for description and validation, often seem weird and categorically unpractical. However, while implementing such odd ideas (either of their own or of external origin), the talented entrepreneurs actively change our world. The aggregated creativity energy of entrepreneurship is the key component for the development of world economics.

Obstacles to the development of innovative initiatives

Managers play the key role in the emergence of innovative initiatives. They may either actively support the creation of innovations or explicitly as well as implicitly hamper innovation activity. The main problem, hampering the innovations, could consist of unsuitable or inappropriate management style.

The reasons for limiting innovative initiatives include *psychological* and *emotional factors*, such as fear of being wrong, misunderstood, criticized, regarded as incompetent. They also include *professional factors*, such as competitiveness and related conflicts, lack of experience, over-categorical judgments, lack of alternative options, narrow knowledge. The *perception factors*, limiting the innovative initiative, include categorical and narrow thoughts, lack of adequate intellectual level. Finally, *personal factors* include ambition, sensitivity, idleness, arrogance, self-interest, and conservatism.

Among the other obstacles, there are *inadequate or ineffective motivation techniques used by managers*. The reference to an employee that made a mistake as a negative example or the support of the employees that lack the innovators' features could serve as an illustration of such inadequate techniques. The employees should have the room for mistakes in order to reveal their innovative potential.

In addition, the excessive bureaucracy of organizational structures hampers the innovative process to a large degree and prevent both the generation of ideas and introduction of innovations. This situation involves fear and constraints that discourage creativity.

Another problem for innovation is the *manager's conservatism*. Manager does not see or is unwilling to see the innovative idea as feasible. As a result an idea lacks the support and further practical development. However the experience of successful companies proves that many brilliant ideas seem, at the first sight, unfeasible or inadmissible in that organization or even in the society.

Often the problem that is related to the lack of creativity includes the *differences in the situation assessment between the employees and the senior management* that lead to unfavorable perception of innovation. This might be explained by the fact that the company management possess the important and valuable information which is not available for employees. Such a problem could be solved by building the efficient vertical communication networks.

The next problem is *the lack of horizontal connections or their weak or inefficient coordination in the organization*. Successful innovations require the experience engagement of several departments all together, whereas unsuccessful innovations are often the result of the weak cooperation. Therefore the big companies working on innovations actively involve the employees of different departments into the innovation process. The small innovation organizations solve this problem by modifying the team roles.

Many employees *lack creativity* in their work due to the *permanent time issues related inadequate allocation of tasks or lack of time management*. At the same time the senior management is often in a stress that leads them to grasp the very first idea and stop searching for new creative ideas. These and other problems could be addressed by the efficient innovation management.

The rules for transferring creative initiatives

The experience of successful companies working on innovations and the research in innovation management suggest that overwhelmingly the best managers at such organizations are those who have engineering or similar background, leadership skills and respect of their colleagues. Such leaders usually reveal their technical and creative skills during projects implementation. They exercise ingenuity and competence in management, adaptability to the existing conditions, and capable to achieve successful cooperation between the research and organization's management. Strategic aim of such a leader is to unite the creative and innovative skills of the staff with the commercial aims of the company without resorting to hardline techniques.

In practice such an approach presumes giving the researchers the freedom to create and to provide them with the necessary technical resources. Together with this, there is a need for the establishment of close contacts between the management personnel and researchers. During the formal and informal meetings the researchers should be directly involved in decisions regarding the planning, financing, assessment of their own work. As a result the combination of the maximum research freedom with the maximum understanding of researchers' ideas by the senior management to the largest degree ensures the coincidence of the researchers' personal goals and the company's goals.

The establishment of such cooperation mechanism in practice is a complex process. The factors that contribute to its realization, first of all, include the fostering of the emotionally favorable environment. To achieve this, the manager has to apply the motivation techniques at the company in a right way. The researcher's motivation includes: 1) search for the truth; 2) search

for social utility; 3) financial interests; 4) search for colleagues' recognition and acknowledgment and so on. The manager should take into account these needs while developing the motivation mechanisms at the company.

M. Edwards and D. Sproull identified a range of factors to enhance creative process and innovative initiatives.

The *first group* of such factors of primary importance includes:

- elimination of obstacles that hamper the emergence of innovative skills within the company; development of skills that allow employees to frame the problem in a wide context;
- multiple the methods of problem solving;
- development of internal communication;
- refusal to employ the authoritarian methods of management and involvement of many people in the decision making.

The *second group* of factors includes:

- an increase of the employees' self-esteem;
- activities that promote and support the innovative initiatives;
- development of the discussion skills that exclude bias or judgmental approaches;
- development of flexible mind and imagination.

The *third group* includes the factors that do not get much attention but, according to the authors, could significantly matter for enhancement of innovation products. These are:
1) The steps allowing the employees to better understand the basics of the company's reorganization and develop the participatory skills for the innovations' process. The lack of such knowledge and skills have caused many innovations to fail.

2) The steps that develop the employees' time management and stress reduction skills.

3) The systematic normative improvements are the necessary condition for the enhancement of company' innovative potential and the innovations' support. Unless the norms are changed for the benefit of innovations' support, the new ideas and proposals are bound for meeting resistance.

4) Another condition is to use the creativity criteria for the assessment of an employee or a company professional activity and to measure level of performance of the methods for increasing creative possibilities.

Organization of inventive and innovative work at the enterprises

In recent years, the most innovative enterprises employ the *collaborative innovation type* of work that involves contribution of each participant in the cooperation process. Due to participation in collective activities an employee increases his/her own professional competence. The employees of such enterprises are oriented towards collaboration with the colleagues from other departments. They also exercise flexibility in decision-making and changing positions.

These features as well as collaborative work serve the basis for employees' personal development.

Nowadays the *idea incubator* environment became the popular way to motivate innovative ideas at the enterprise. The employees of different company's levels are gathering to produce innovative ideas without any company bureaucracy pressure or interference. The value of such an approach consists in an employee's independent elaboration of the perspective idea at incubator without coordinating all of the issues with the senior management. Today many successful companies such as Boeing, Adobe Systems, Ball Aerospace, Ziff Davis and others, have chosen this approach.

One of the approaches to the successful implementation of innovations is defined as a *model of horizontal networks*. According to this model, employees of different departments of an enterprise all contribute to the emergence of innovation products and processes. While working in teams the experts of those departments exchange the ideas and solve diverse innovation tasks. The models of horizontal networks are often transformed into the *rapid cycle teams* that are not only multifunctional but also international teams with additional resources and power to finalize the innovation project early.

Venture financing of risky innovation projects is the most effective and widespread private form of innovation activity enhancement in conditions of market economy in the recent years.

Venture activity is directed on temporary pooling of the legal and/or individual capitals to create small but mobile and efficient enterprises that finalize and commercialize certain innovation projects. After successful implementation of such projects these enterprises either are taken over by the bigger enterprises or strengthen the financial positions by selling the innovations' licenses. In the latter case, the profit from the innovation licenses sales is invested into the own production development and commercialization.

Venture innovation activities involve the risks of private capital investment in cooperation with the entrepreneurs with organizational and intellectual potential. The aim for such an involvement consists in the possible future profits from the implementation of innovation ideas and commercialization without any guarantees for success. A general indicator of different forms of risks is the financial risk of entrepreneur and investor assessed as the potential losses in case of unsuccessful implementation of the possible project (regardless its reasons). The main function of venture funds is the process of financing of risky projects at initial stages showing the maximum uncertainty of costs' return.

Course Unit 2. Innovation activities: financing, organization, legal support

Topic 2.1. FORMS OF INNOVATION ACTIVITIES AT THE ENTERPRISES

Introduction of new products and technologies, developed by the company itself or by external bodies. Short- and long-term innovations. Acquisition of licenses. Share participation in innovation activities. Specialized innovative enterprises, the main characteristics of the innovative enterprise.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the difference between various types of innovative products and organizations and their features
2. Know how to organize specialized innovative enterprises

Key words: *business-incubator, production life cycle, intellectual property, license agreement, know-how, patentability*

Promoting innovative (scientific and technical) products to markets is connected with features of the relevant markets and products. These include the following:

- innovative products as a result of innovative activity can become a commodity on almost all phases and stages of an innovative cycle, except those results which make the state secrets;
- consumers of scientific and technical products at all stages of an innovative cycle are subjects of managing, i.e. developers of scientific and technical products are suppliers of an innovative product for its use in innovative activity of the consumer;
- the market of innovations is most often new both for the seller, and for the buyer owing to novelty of offered goods;
- it is the market with small elasticity of demand from the price, that is the price policy only slightly influences sales volumes especially at the first stages of life cycle of an innovative product as goods;
- the market of innovations rather narrow in comparison with other markets. Especially it concerns scientific, technical and knowledge-intensive products of manufacturing purpose;
- the market of innovations is characterized by the exclusive degree of uncertainty of result (risk) caused by unpredictability of consumers reaction on an innovative product.
- it can be no direct competitors on the market owing to monopoly for intellectual property;
- not only developers of innovative products and its consumers are subjects of the market, but also intra-branch and external competitors, producers of accompanying products and services; producers of substitute products. The last two subjects of the market at certain stages of scientific and technical products as goods life cycle can become the strong contenders not less dangerous, than intra-branch competitors.

Innovations are characterized by short or long life cycle. Innovations in the field of information and communication technologies, consumer goods usually have short life cycle as updating of products in the market happens very quickly. The majorities of the small innovative companies are connected with production of short - time innovations and, owing to their flexibility, have a possibility of fast transition to release of other product. Besides, the small innovative companies are limited in primary financial resources for introduction of innovations with long life cycle.

Innovations with long life cycle are in demand of considerable initial investments, but have an impact on the market for a long time. The large companies are more interested in innovations with long life cycle as they allow them to play an important role in the market for a long time. This approach also defines a various marketing policy. As the small innovative enterprises enter already existing market of products, they have to actively advertise their product to secure a certain share of the market.

The large enterprises often form the new market of products. In this case buyers need more time to understand that a new product is required.

Distinction in innovations promotion by small and large innovative enterprises defines also a different approach to the use of intellectual property objects (OIP) and licenses. It is necessary also to estimate an interest of the businessman to rather widely use intellectual property.

At introduction of objects of intellectual property in a civil turn the solution of a question on a form of use of this object always is necessary to the owner: to do it in own production or to choose one of forms of commercial use. According to recommendations of the World Intellectual Property Organization commercial transfer of OIP can be carried out as follows:

- sale of all exclusive rights on OIP by the owner;
- licensing;
- know-how transfers.

In addition, there are another forms of OIP commercialization such as paying in authorized capital of the enterprise, getting a credit against security of OIP, franchising. To choose an optimum decision of commercial OIP use the following should be done:

- patent research aimed at determining a technological level and trends of development of objects of innovative activity, their patentability, patent purity, competitiveness on the basis of patent and other information;
- the market research including study and analysis of developed new goods competitiveness factors using inventions and other OIP, and also research of tactical forming factors of the market and prospects of its development during life cycle of goods inventions.

Choosing a form for OIP use is carried out on the basis of possible options comparison. Use of intellectual property objects (for the industrial enterprises first of all, of industrial property objects (IP)) in the own production is the most effective option. After all in this case all profit on use of given object remains at the industrial enterprise possessing exclusive rights on it.

However there is a variety of reasons making the use of industrial property objects owned by industrial enterprise, in own production complicated:

- there is no possibility on industrial enterprise to finance production using objects of industrial property owned by the given enterprise;
- the cost of production made using industrial property objects owned by the enterprise will be obviously too high to provide the necessary volume of realization and profit;
- manufacture of products mentioned above doesn't correspond to a profile of primary activity of the enterprise;
- legislation doesn't allow to organize manufacturing and sales of products using the given industrial property object.

If it is impossible to organize own production using given OIP it may be possible to sell the license for the right to use object of industrial property. The profit from such form of commercial use of industrial property object, as experts estimated, will be for 70-90% less than from application of the previous option. However trading licenses can make sometimes much more profit than the organization of own production.

Very often the best option will be combined form of commercial use of industrial property object at the industrial enterprise i.e. both own production and sale of licenses.

Sale of all exclusive patent rights by the owner is a full assignment of industrial property object from one subject to another without time limitatation (certainly, within period of this right validity according to the legislation) and without limiting the territory (within the territory of action of a transferred exclusive right).

Licensing is granting by the patent owner to other physical or corporate body of the permission to commit one or more actions in a certain country during the limited period of time. The owner of the patent issued in the given country has an exclusive right to commit actions mentioned above. License agreement (contract) that secures such a deal is the most common means of transmitting rights for use of the industrial property objects protected owing to the state registration. License trade is the main form of technology transfer.

The license contract is characterized by the following main indicators:

- conditions of the license usage;
- the volume of the rights transferred under license;
- mode of license object legal protection (patent law object, means of an individualization, copyright object);
- nature of license object usage (industrial or commercial);
- degree of industrial development of license object (at a stage of idea, technical solution, industrial development, etc.).

Cash award as a payment for the license acts as a payments under a licensing agreement of three types:

- royalty;
- lump-sum payment;
- the combined payment.

The royalty is a license remuneration in the form of periodic assignments (a share from profit or amount of sales of products made on licensed technology). In pure form or in combination with other types of payment these assignments are the part of the majority (up to 90%) of license

agreements. Royalty are usually paid at the end of every year of the agreement action, starting from the moment of finished goods release. In the presence of a condition on payments in the form of a royalty in the contract, the condition about the minimum guaranteed payments can be there as well. In long-term relations the differentiated rates that vary by years are applied. Specific rates cuts when sales grow are used for stimulation of the licensee to expansion of volume of output. Such form of payments is connected first of all with desire to share risk. In case of failure with license product manufacturing losses will be sustained both by the licensee and the licensor.

Lump-sum payment represents payment of firmly fixed sum of license remuneration at once or by 2-3 portions i.e. doesn't depend (formally) on the volume of realization of products made under licenses. In this case all risk is taken by the licensee that is good for the licensor. But, on the other hand, licensee will lose a chance to get super-profits in case of unexpected success of a license product.

In practice the combined payments including the initial sum in the form of lump-sum payment (10-13% of the total price of the license) and the subsequent periodic assignments (royalty) are used most often.

The problems connected with commercial use of IP can be divided into the following main groups:

1) problems of regulation of the relations at creation of IP objects at the enterprise;
2) problems of acquisition and payment of property rights on use of IP objects created outside the enterprise;
3) problems of ensuring protection (safety) and legal protection of IP objects;
4) problems of commercial use of IP as property (intangible assets) of the enterprise;
5) financial and economic problems of use of IP and the organization of its accounting.

As experience shows, the majority of the small innovative enterprises work at some stages of product (innovation) life cycle. Large organizations often work at all stages of innovation life cycle. Let us consider distinctive features of some types of the organizations (enterprises) which are engaged in different degree in innovative activity. We will provide only brief information about them (see Table 2.1.1). Any organizational and legal form of the listed innovative organizations is possible.

The last decades of XX and the beginning of the XXI centuries are characterized by activization of processes of internationalization, globalization and integration. Therefore the most perspective form of integration at microlevel now is the cluster form. The task of clusters is creation of the economic blocks (clusters) in national economy which include firms and the organizations, connected by manufacturing of end products and a geographical position.

Table 2.1.1.

Distinctive features of the progressive specialized and large complex innovative organizations

Type of organization	Definition of activity	Distinctive features of the innovative enterprises
Marketing organization (MO)	The organization which is engaged in market segmentation, competitiveness standards development, marketing concept implementation in innovative enterprise units, innovative enterprise strategy development, distribution system definition, advertizing and stimulation of sales of goods acceleration	Marketing is subdivided on strategic and tactical ones. Strategic marketing is directed on implementation of the marketing concept at the first stage of product life cycle (LCP) and the first function of management. If for the sake of momentary resources savings modern research methods will not be applied at this stage then at the subsequent LCP stages organization will suffer losses, in hundreds and thousands times exceeding the economy received earlier. It is necessary to produce what buyer awaits, and not what you are capable of producing. **Distinctive MO features.** – orientation of all activities to perspective and to consumer; – progressive system of research information support; – professionalism and high salary of employees; – skill to communicate, mobility and comparative youth of the personnel; – high culture of customer service
Research Organizations (RO), Research Centers (RC)	Organizations which are engaged in scientific and experimental assessment of competitiveness of goods standards materialization possibility, development of innovations, their testing and diffusion	Results of market and scientific research in the form of novelties will be embodied in the relevant documents (inventions, patents, methods, a know-how etc.) at a stage of fundamental and applied research. These novelties can be implemented within own enterprise, i.e. will turn into innovations, or can be sold so that commercial result will be received. **Distinctive RO/RC features:** – implementation of marketing concept; – very high level of funds and information provision of research staff work; – compliance of working conditions to the international standards; – freedom of creativity; – high culture.
Manufacturing enterprise (organization)	The organization which is engaged in development of new products manufacturing, mass production, tactical marketing and sales of manufactured products	The manufacturing enterprise is engaged in a materialization of innovations results. At high quality of preliminary production works it is required to provide high quality of products manufacturing, tactical marketing, sales. Innovations implemented in production therefore the commercial result of innovative activities will only come after sales. **Distinctive features of manufacturing enterprise:** – carrying out high-quality market research of the enterprise "entrance" (suppliers) and "exit" (consumers); – existence of the modular integrated easily readjusted technology ensuring product quality and saving resources.
Scientific Parks (SP)	Innovative organizations incorporated with large scientific centers (universities, institutes)	**Distinctive SP features:** – existence of the innovative center or university, higher education institution with a high scientific potential; – high level of research and development novelty.

		There are three types of SP: – SP in the narrow sense of the word, only involved in research; – research parks where innovations is brought to a stage of a technical prototype; – c) incubators (in the USA) and the innovative centers (in Western Europe) within which universities "shelter" newly emerging companies, providing them with land, laboratory equipment, etc., for a modest fee.
Industrial Park	Compactly located complex functioning of which is based on commercialization of scientific and technical activity and acceleration of innovations advancement to goods production	**Distinctive features of Industrial park:** - presence of organizations which form full cycle of innovation production: from ideas to promotion of innovations to the market (scientific institutions, higher education institutions, industrial enterprises, service departments etc.); – compact location; – area limitation; – availability of good quality infrastructure; – location in environmentally friendly picturesque areas; – high efficiency of innovative activity.

Thus the area in which they are settled down should be considered as place of accumulation of "the critical weight" of social and human capital, scientific, innovative and production potentials. Only if such a combination exists clusters are steady, systemically emerge and competitive. Clustering is already spread in more than 50% of leading countries economies and it acts as a new vector of world economic system development.

Clusters are characterized by such key elements as: geographical concentration; specialization; set of characters; competition and cooperation; critical weight; cluster life cycle; innovation.

Geographical concentration of clusters facilitates an exchange of ideas and people, specific natural resources or other unique local assets becoming more affordable. It, in turn, encourages and strengthens innovative activity. The nature of cluster specialization is not necessarily limited by any sector. Clusters can develop in the combined directions when they are exposed to internal or external influences. The interconnected specialized suppliers and the qualified consumers increase competitiveness of a cluster in the global markets. Clusters also can create intensive alliances with various organizations, such as universities, research institutes, the public authorities, the organizations of consumers, etc.

Thus, forms of innovative activity at the enterprises depend on the size of the company, a choice of development strategy, a field of activity, degree of involvement in cooperation with other participants of the market.

Topic 2.2. VARIOUS ORGANIZATIONAL FORMS OF INNOVATIVE ENTERPRISES AND THEIR ACTION STRATEGY

Classification of innovative enterprises. Innovation strategy of enterprises. Strategy of Violents, Patients, Combatants, Experts.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the difference between various types of innovative strategies and their features
2. Know how to organize specialized innovative enterprises

Key words: *Bowman's strategy clock, business angels, commutants, explerents, violents, cost leadership, stakeholder, competitive advantage*

Classification of innovative enterprises.

Organizational structures of innovation management is the organization involved in innovative activities, research and development. ***Scientific organization*** is the organization (institution, enterprise, company) for which the R&D is the main activity. Scientific research and developments may be the general kind of activity for the department which is also part of the organization (institution, enterprise). Presence of such departments is not dependent on belonging to one or another sector of the economy or legal organizational form of ownership.

In accordance with the recommendations of the Frascati Manual (2002 Edition)[2], the following is the classification of scientific organizations by sector of science and types of organizations united by organizational characteristics and specialization of work.

Among the organizational structures of innovation management special role belongs to ***small firms*** because small groups are more mobile, better perceived and generate new ideas. For example, in the United States 7 of the 13 most important inventions in the steel industry were created by independent inventors and all others by small firms.

Small Research Business was formed about 60 years ago in the 20th century. Small and medium-sized research firms were often created near the university centers, jointly renting and using land, laboratory and information technology equipment from the universities.

For example, there are more than 3,000 small and medium-sized electronic firms located around Stanford University which employs 190-200 people each. Each of them focused on the development of one or two kinds of new products, and generally provides 20% of world demand for computer and electronic components of a particular species. In the Japanese Processing Industry there are 750,000 factories, 70% of them are small businesses employing from 1 to 9

[2] Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, 6th ed. OECD Publishing, 2002. – 256 p.

people, and 10% are companies employing 10-20 people. All of them have also been implicated in innovative activity.

Table 2.2.1

Classification of innovative enterprises

Sector	Contents
State	Organizations providing management for the State and meeting the society demand at large (defense, public order, public health, culture and leisure, social security). Non-profit organizations which do not make a profit but mainly involved in the research activities related to public and administrative functions.
Entrepreneurial	All organizations and businesses whose main activity involves production of goods or services for sale, including state-owned and venture entrepreneurs.
Higher education institutions (HEIs)	Universities and other HEIs, regardless of funding source or legal status. Research institutes, innovation centers which are under direct control or management, or associated with universities.
Private non-profit (non-commercial)	Private organizations (professional societies, unions, associations, public and charitable organizations, foundations) which not keen to get profit.

The American practice of organizing exploratory research has generated entrepreneurship in the form of ***venture business***. It is represented by small independent firms specializing in research, development and the manufacturing of new products, created mainly by research scientists, engineers and innovators. Venture businesses have circulated in the United States, Western Europe and Japan.

Innovation strategy of enterprises.

General Strategy of Organization

Strategy is the creation of the unique and advantageous position which provides certain choices of activities. Michael Porter's different variants of common strategies reduced to the three basic types of strategies: ***stability, growth, reduction***.

1. The **stability strategy** is focusing on existing lines of business and supporting them. It is typically used by large firms.
2. **Growth strategy** involves organization increase, often through penetration and capture of new markets. Growth strategy could include vertical or horizontal integration.
3. **Reduction strategy** may be applied in cases when the survival of the organization is threatened. Its varieties shown below:
    - *Reversal Strategy*. It is used if the organization is not effective but has not yet reached its critical point. This strategy means giving up producing unprofitable products, surplus labor force, poor working distribution channels and further search for effective ways of using resources mechanism.
    - *Separation Strategy*. If a company has several types of business and at the same time one of them does not work well, it can be waived. Sale of this business unit or its transformation into a separate operating company is a good way to proceed.

- *Liquidation Strategy*. When approaching critical point (bankruptcy) closing process (liquidation) and selling business assets will occur.

The main innovation strategy.

The basis for the development of innovative strategy constitutes the theory of product life cycle (PLC), the market position of the organization and its science and technology policy. As a model, usually one of the following types of investment strategy is taken:

1. *Offensive innovation strategies* are typical for firms whose activities are based on the principles of business competition. They are inherent to small innovative organizations.
2. *Defensive innovative strategies* are aimed at keeping the organization's competitive position on existing markets. The main function of such strategy is to strengthen the relation "input-output" in the innovation process. This type of strategy requires intensive research and development (R&D).
3. *Innovation imitation strategies* are used by organizations or those having strong market position and technology but are not pioneers in the market of various innovations. The essence of the model is the production of basic consumer properties using copied (but not necessarily technical features) innovations and placed on the market by small innovative organizations or leaders.

Choice of innovation strategy

Innovation strategy is based on the principle of “time is money". Choice of innovation strategy is based on the stage of the product life cycle. According to modern science, in any given time period the competitive production unit (organization, institution), specializing in the production of products to meet specific social needs, is compelled to work on the goods directly relating to the three generations of technology: the outgoing, the prevailing and emerging (prospective).

Professor Porter identifies three types of strategies: ***cost leadership***, ***differentiation*** and ***focus***. They were first set out by Michael Porter in 1985 in his book "Competitive Strategy: Techniques for analyzing industries and competitors" (Figure 2.2.1)[3].

The low cost leader in any market gains competitive advantage from being able to produce at the lowest cost. Factories are built and maintained; labor is recruited and trained to deliver the lowest possible costs of production. “Cost advantage” is the focus. Costs are shaved off every element of the value chain. There are two main ways of achieving this within a ***cost leadership strategy***:

- Increasing profits by reducing costs while charging industry-average prices.
- Increasing market share through charging lower prices while still making a reasonable profit on each sale because you've reduced costs.

Differentiated goods and services satisfy the needs of customers through a sustainable competitive advantage. This allows companies to desensitize prices and focus on value that generates a comparatively higher price and a better margin. The benefits of differentiation

[3]Electronic Resource. Mode of access: http://www.mindtools.com/pages/article/newSTR_82.htm

require producers to segment markets in order to target goods and services at specific segments, generating a higher than average price.

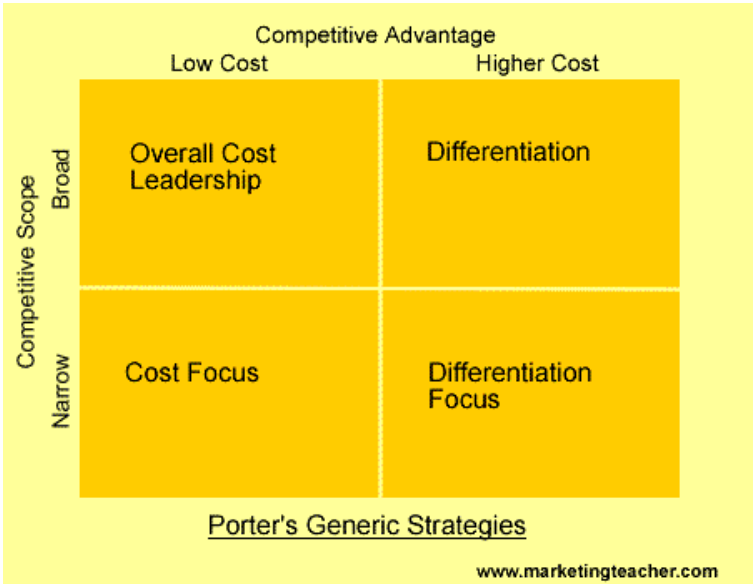

Figure 2.2.1. Porter, M.E., "Competitive Strategy: Techniques for analyzing industries and competitors" New York: The Free Press (1980)

To create a successful ***differentiation strategy***, organizations need:

- Good research, development and innovation.
- The ability to deliver high-quality products or services.
- Effective sales and marketing so that the market understands the benefits offered by the differentiated offerings.

The focus strategy is also known as a **'niche' strategy**. Where an organization can afford neither a wide scope cost strategy nor a wide scope differentiation strategy, a niche strategy could be more suitable. Here an organization focuses its effort and resources on a narrow, defined segment of a market. Competitive advantage is generated specifically for the niche. A niche strategy is often used by smaller firms. A company could use either a cost focus or a differentiation focus.

Hybrid Strategy *(combination of* ***cost leadership*** *and* ***differentiation*** *strategies)*[4].

This new ***hybrid strategy*** may become even more important and more popular with increase of global competition. Compared to companies relying on a single generic strategy, companies that integrate the generic strategies may position themselves to improve their ability to adapt quickly to environmental changes and learn new skills and gain new technologies. This would more effectively leverage core competencies across business units and product lines, and would also help produce products with differentiated features or characteristics that customers value, and provide these differentiated products at a low cost, compared to competitors' products.

[4] Hybrid Strategy: A New Strategy for Competitive Advantage. Mas B. Baroto, M. Abdullah. International Journal of Business and Management; Vol. 7, No. 20; 2012. p.124

This is because of the multiple, additive benefits of successfully pursuing the *cost leadership* and *differentiation* strategies simultaneously. *Differentiation* enables the company to charge premium prices and *cost leadership* enables the company to charge the lowest competitive price. Thus, the company is able to achieve a competitive advantage by delivering value to customers based on both product features and low price.

Michael Porter did not solely define the basic competitive strategy. Let us consider other approaches to the definition of basic competitive strategies that advanced by A. Yudanov[5].

Strategy of violents, patents, commutants, experiments.

Violents *("Overall-cost Leadership strategy" by M. Porter)* defined as a firm with a "power" strategy. They have high capital and technology development. Violents engaged in large-scale and mass production of products for a wide range of consumers, impose "middle terms" for quality and are satisfied an average price level. Company Violents (as patient) are profitable. *Profitableness* is an indispensable condition of firms. They should have a position of an innovation manager and be very careful to change their policies.

Explerents are the pioneers of business *("Focus strategy" by M. Porter).* The strategies they realize are oriented on risky innovations based on applying the newest highly-efficient technologies leading to maximum profit and venture investments. According to expert's estimations, risks of this type of strategy are extremely high. The most positive approximations give three out of ten venture projects reaching the break-even point; six loose and only one can become highly profitable. Explerents can't independently replicate innovations. Procrastination is threatened too with the emergence duplicating copies or analogues. Union with a strong firm (even under condition of uptake and subordination) allows to achieve favorable conditions and even save a certain autonomy.

Patients *("Differentiation strategy" by M. Porter*) are placed into (tied to) niche specialism and production of small batch of elite goods and overcharge purchasers. Usually their goods are of very elastic demand and is what commits them to the tough forms of competitive struggle; meeting the needs of the market generated by the action of fashion, advertising and other media. Patients operate on the stages of growth of output and simultaneously on stage of decreasing inventive activity.

Commutants "*Focus strategy" by M. Porter)* are small, non-specialized companies. They are very flexible and use any possibilities for business, but usually don't possess extended manufacturing or Research and Advanced Development capacities. Commutants cover the remaining parts of the market. These companies tend to replicate the competitors' commercial secrets rather than create themselves. This is why we do not emphasize their role in our research. They take everything that does not cause interest at Violent, Patient and Explerent. Their unification role is connecting; therefore, they were called "communicator". They actively contribute to the promotion of new products and technologies on a massive scale creating new services on their basis. It accelerates the process of diffusion of innovations. Innovative management companies should be well versed in the specifics of buyer of the goods, the situation on the market, and also precisely, quickly and reliably anticipate potential crises.

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[5] A. Yudanov "Competition: Theory and Practice." Moscow, Gnom i D Publ. – 2001. – 304 p.

Another way to market is the creation and development of the pioneering explerent companies. The founders of the company, breaking consumer's stereotypes and business traditions are forced over a long period of time to overcome the inertia of the market. Further development of the company takes place within the *violents strategy*. Thus, the numbers of cases with positive developments dynamics of firms are limited as follows:

1. Commutant → Violent → Patient;
2. Explerent → Violent → Patient;
3. Explerent → Violent.

Based on this scheme, the management of any company for developing the strategy should be defined depending on answers to the following questions:

1. What type of strategy is mainly used for the firm's current business?
2. What are the possible scenarios for its further development in the desirable and undesirable directions?
3. What should be done for the development of the company in the required direction?

The importance of the R&D development in entrepreneurship is that it creates structures that support and stimulate the development of small innovative enterprises. These are technology parks, innovation and business incubators which can be implemented to any profitable project.

Business incubators are usually patronized by the bank, ready to invest some venture capital into incubator projects. ***Business angels*** are private investors putting money into innovative projects (StartUp) start-ups in exchange for a return of investment and share in the capital. Business angels invest some of their own funds in the most innovative companies on the early stages of development: this is the "seed» (seed) and the initial (start-up) support of their technical and commercial development.

Topic 2.3. STATE REGULATION OF INNOVATION ACTIVITIES

The notion of intellectual property. Patents. Licenses and legal mechanism for transferring innovations. International scientific and technological cooperation.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the features of state regulation of innovation activities
2. Know the mechanism of international scientific and technological cooperation

Key words: *State Innovation policy, innovation cost-effectiveness, Kondratiev cycle, payback period, rate of return*

The need for state regulation of innovation processes caused by objective circumstances of all countries' economic development. Innovations in modern society are becoming a factor of economic growth stabilizing and national security strengthening. Therefore, the state must exercise its regulatory impact on innovation processes.

In different countries, the process of state regulation of innovation processes can occur in different ways, which is reflected in the state legislative acts.

Japan has a minimum of own natural resources at its disposal, therefore the government considers the scientific and innovative policy as a most important means of stimulating overall economic growth and enhance the international competitiveness of the country. The Japanese government does not manage industrial development as the decision-making authority, a mutual partnership probably exists between the elements of the state apparatus and the industry sector based on pragmatic solutions, mutual respect, coordinated activities aimed at achieving common goals.

In France the level of centralized regulation of innovation is the highest, research are recognized as national program and presented in the form of five-year strategic research plans.

In England there is no system for innovation's centralized control, but well designed interaction mechanism exists, enabling the coordination of innovations development at the state level.

In the U.S., economists and sociologists see in the venture business a deliberate entry of the U.S. economy in a phase of growth of the new "Kondratiev cycle"**.**

State regulation of innovative activities should be done by:

- identification and support of innovative activities priorities directions on state, sectoral, regional and local levels;
- formulation and implementation of national, sectoral, regional and local innovation programs;
- creation of the legal framework and economic mechanisms to support and stimulate innovative activities;
- protection of the rights and interests of the subjects of innovative activity;
- financial support of the innovation process implementation;

- introduction of preferential taxation of innovative activities;
- support of the operation and development of modern innovation infrastructure.

Thus, there are four main forms of innovative activities support (Fig. 2.3.1).

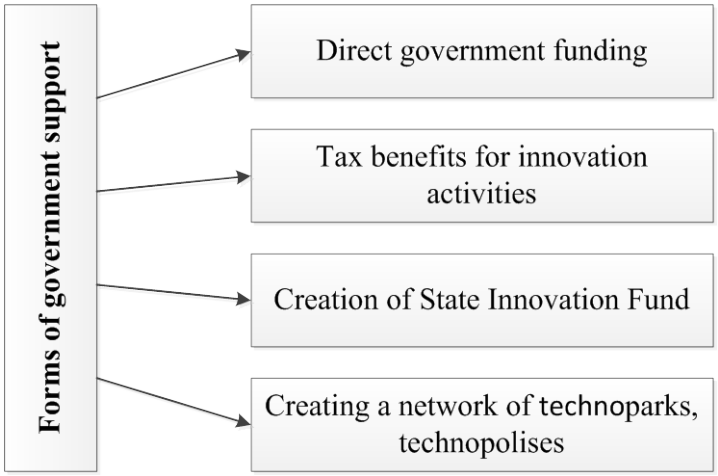

Figure 2.3.1. Forms of public innovation support

State regulation of innovative activities requires an effective management mechanism, that is a set of tools (economic, motivational, organizational and legal) for purposeful influence of subjects of innovative activities state regulation in order to achieve an indicated aim.

There are roughly four options for innovative policies that were the priorities during different periods (in various combinations) in developed countries (Fig. 2.3.2).

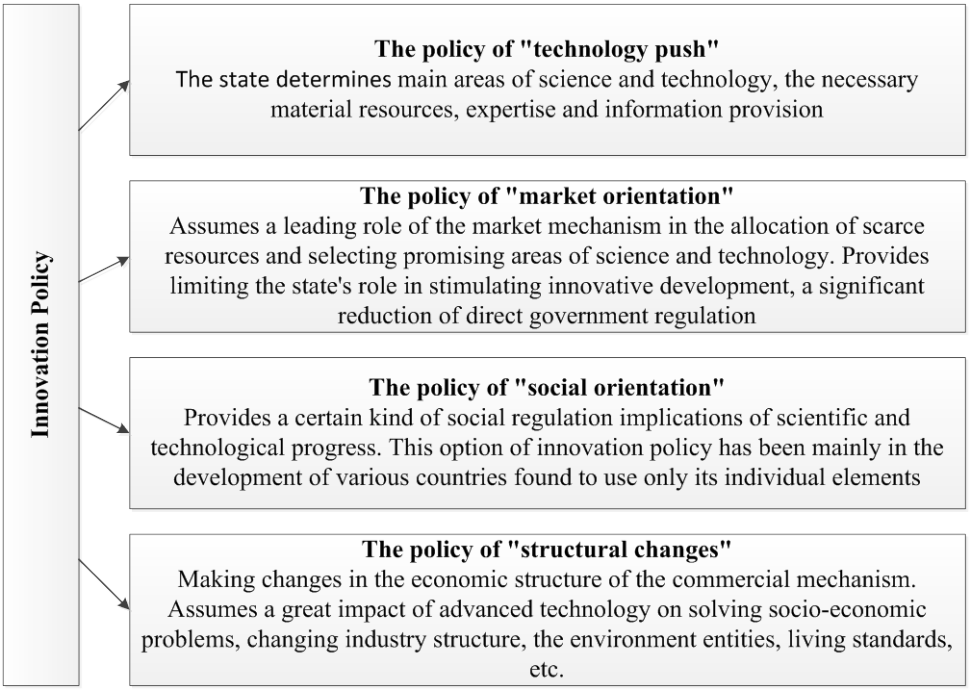

Figure 2.3.2. Types of innovation policy

Features of implementation of purposeful influence of subjects of state regulation on each stage of innovation process should be taken into account during the process of state regulation of innovative activities.

Some specific features of state regulation of innovation processes at the national and regional levels are shown in table 2.3.1.

Table 2.3.1

Features of state regulation of innovation processes

<table>
<tr><th rowspan="2">Stages of the innovation process</th><th colspan="2">The level of government regulation</th></tr>
<tr><th>state</th><th>regional</th></tr>
<tr><td>Fundamental research</td><td rowspan="2">Almost completely organized and funded by the state</td><td rowspan="2">There is indirect interference in economic activities of relevant scientific (research) institutions as the organizations that operate on the certain territory; coordination of activities in some areas</td></tr>
<tr><td>Applied research</td></tr>
<tr><td>Development and design</td><td rowspan="2">The government can stimulate innovative activities through tax remissions, direct financial assistance from centralized funds, etc.</td><td rowspan="2">Subjects of state regulation of innovative activities at the regional level can assist in accessing technology, cancellation (reduction) of some local taxes, carry out direct financial assistance from regional budgets, etc.</td></tr>
<tr><td>Trial Introduction</td></tr>
<tr><td>Industrial production</td><td colspan="2">Intervention of state or municipal enterprises in economic activities</td></tr>
<tr><td>Marketing</td><td colspan="2">Public authorities provide access to relevant statistics and background information</td></tr>
<tr><td>Sales</td><td>The state takes measures (legislative and administrative) to protect domestic producers, to lobby theirs interests in foreign markets, to organize public and international exhibitions, presentations, fairs, PR-campaigns, etc.</td><td>Majority of innovative products procurement is organized through a system of government orders; assistance provided through the provision of equal and transparent access to the competition and the organization of regional and interregional exhibitions, fairs, presentations, PR-campaigns, etc.</td></tr>
</table>

International experience on influence on the innovative processes indicates a lack of formal criteria which would ensure effective scientific, technological and innovative development. Each state creates its own national innovation system through which exercises in particular government regulation. This regulation includes measures of state support for innovative activities and aimed at ensuring economic growth of the state and improvement of its competitiveness.

Topic 2.4. EVALUATING THE INNOVATIONS EFFICIENCY

Comprehensive assessment of innovations efficiency. Economic efficiency. Variable cost, yield index, profitability (the inner form of profitability) and liquidity (payback period) methods. Innovations implementation risks management.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the methods to assess innovations efficiency
2. Understand and be able to assess innovations implementation risks management

Key words: *net present value, break-even point, nominal interest rate, discounting*

Innovative project is a form of targeted innovation management of the company. The process of innovation implementation in the company is based on the developed set of relevant documents and attraction of investment in the innovative projects.

Evaluating the effectiveness of innovation is the most important stage in the process of adopting innovative solutions.

Methods for evaluating the effectiveness of innovative projects:

1) Method of Net Present Value, *NPV*.

$$NPV = \sum_{k=1}^{n} \frac{P_k}{(1+r)^k} - \sum_{j=1}^{m} \frac{IC_j}{(1+i)^j},$$

where i is the estimated average rate of inflation;

P_k is the profit anticipation by years;
r is the discount rate;
IC is the output value of investments over the years;
m is the consecutive years of financial resources investment;
n is the number of years of getting a profit from investments.

Or, if the output investments are one-time:

$$NPV = \sum_{k=1}^{n} \frac{P_k}{(1+r)^k} - IC$$

If $NPV > 0$, then the project should be accepted. The owner receives profit.
If $NPV < 0$, then the project should be rejected. The owner will have losses.
If $NPV = 0$, then the project is neither profitable nor unprofitable.

NPV criterion reflects estimations of changes in the economic potential of the company in the event of acceptance of the given project (in absolute value).

2) Method of Profitability Index, *PI*.

This index is an addition to ***NPV***.

$$PI = \sum \frac{P_k}{(1+r)^k} / IC$$

If ***PI***>1, then the project should be accepted..
If ***PI***<1, then the project should be rejected.
If ***PI***=1, then the project is neither profitable nor unprofitable.

Project profitability index shows the amount of income (asset growth) of the project on monetary unit of investments and the amount of net profit.

3) Method of Internal Rate of Return, *IRR*.

This index is the discount rate when the amount of revenue resulted from the project equal to the initial investment (spending). Assessment of projects with ***IRR*** is based on determining the maximum amount of the discount rate (***IRR*** = ***r***), at which the project will be breakeven (***NPV***=0).

$$\sum_{k=1}^{n} \frac{P_k}{(1+IRR)^k} - IC = 0$$

If the project will be financed entirely by loans of commercial banks, then value of ***IRR*** indicates the upper limit of the allowable level of bank interest rate above which the project becomes unprofitable.

4) Method of Modified Internal Rate of Return, *MIRR*.

This index is the discount rate which equalize the reduced cost of flight of funds and build up revenue size. ***MIRR*** shows the effectiveness of the project.

$$(1+MIRR)^n = \frac{\sum_{i=0}^{n} IF(1+r)^{n-1}}{\sum_{i=0}^{n} \frac{OF_i}{(1+r)^i}},$$

where OF_i is the flight of funds during i-period (absolute value);
IF_i is the receipt of funds during i-period;
r is the cost of the project sources of financing;
n is the duration of the project life cycle.

The modified rate of return is calculated by the project, which allows not one-time costs but their distribution by year. Therefore, conventionally available funds of the project may be temporarily used for other projects.

5) Methods of Payback Period, *PP* and Discounted Payback period, *DPP*

The method is aimed at defining the period of investment return. Algorithm for calculating the payback period depends on the uniformity of the distribution of predicted income from investments:

a) if the income is distributed evenly by year

$$PP = \frac{IC}{PC'},$$

where ***PC'*** is average annual profit margins;

b) if the income is distributed unevenly

$$PP = n, in\ which \sum_{k=1}^{n} P_k > IC$$

Index of discounted return period takes into account time factor:

$$DPP = \min n, in\ which \sum_{k=1}^{n} P_k * \frac{1}{(1+r)^k} \geq IC$$

Always ***DPP***>***PP***, because the process of discounting is used.

6) Method of *ARR* (coefficient of investments efficiency).

Two traits are inherent to the method: first, it does not involve discounting parameters, and secondly, the income is characterized by net profit ***RN*** (income minus deductions to the budget).

$$ARR = \frac{RN}{(IC + RV)/2'}$$

where ***RV*** is the residual or resale value.

Investments efficiency coefficient compared to net profit ratio of invested capital (***P_a***)

$$P_a = \frac{\sum NP}{\sum AC}$$

where ***NP*** is the net income;

AC is the amount of money invested to the company activities.

If ***ARR***>P_a, the project should be implemented. This method is relatively simple and reliable for projects implemented within one year.

7) Method of Break-Even Point Analysis.

The method essence consists in determining the critical volume of sales at which revenues from sales is equal to costs, that is, the sales volume, after which the company will begin to make a profit.

$$X_{bep} = \frac{A}{V - VC},$$

where ***A*** is the fixed costs, the value of which does not depend on changes in the volume of sales in the relevant period;

V is the unit price;

VC is the variable cost per product unit.

In this method it is necessary to compare the predicted sales of goods (services) with critical sales. It enables to develop measures to expand the markets.

8) The method of reduced costs (economic impact).

$$B_n = C_m + rJC \rightarrow min,$$

where C_m is the cost of production;

JC is the investments.

The method of reduced costs is the basis for calculating the annual economic impact of innovation. It is used for comparison of the options of production development and elaboration of targeted economic benchmarks of innovation.

9) The method of operating instrument (production).

New production activities, conditioned by capacity reserves capacity and expanding sales, can be evaluated using the operational effect.

$$B_o = \frac{BP - C}{P_r} = \frac{BM}{P_r},$$

where ***BP*** is the sales revenue;

C is the variable costs of production and marketing;

P_r is the profit from sale of goods (works, services);

BM (***BP*** – ***C***) is the gross margin.

The greater the impact of operating instrument the greater the business risk.

10) Fischer Point.

Point of intersection of two graphs [***NPV*** = *f*(***r***)] for two projects, which shows the value of the discount factor at which these projects have the same ***NPV***. Fisher Point for two projects (flows) can be defined as ***IRR*** of incremental flow (2 projects – 1 project).

The key efficiency indicators of innovation project are business, budgetary, national economic. They are usually used to evaluate the projects and their selection. (Fig. 2.4.1).

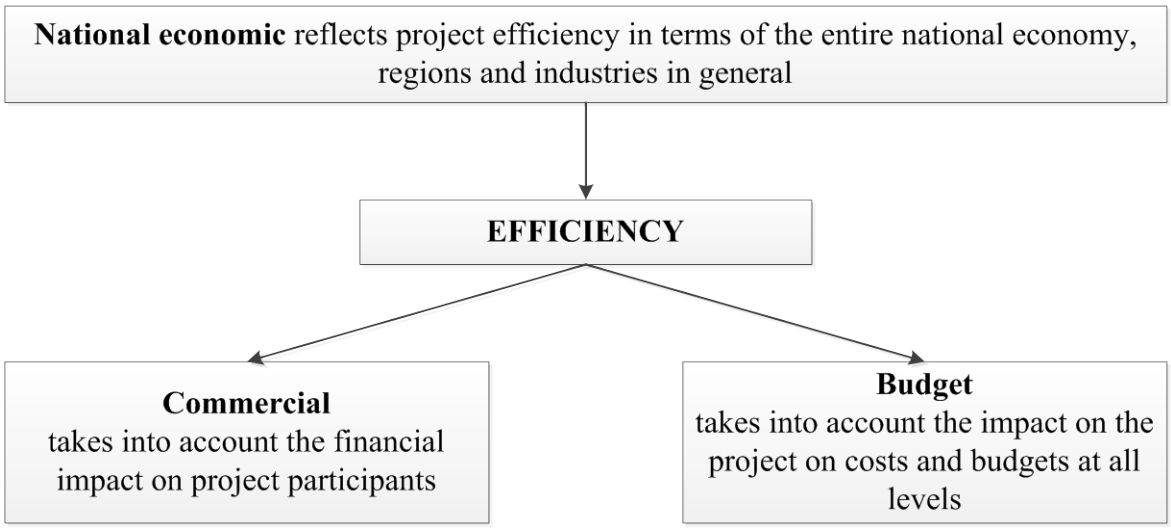

Figure 2.4.1. Performance indicators of innovation project

Evaluation of the effectiveness of innovation should be performed based on complex considering such effects as scientific and technical, social and economic.

Possible **level of risk** must also be taken in attention when assessing effectiveness. Potential losses or gains (of business income) should be found to calculate the **cost of risk**:

$$C_r = P_p - P_p \times I_n + P_p \times I_v,$$

where C_r is the cost of risk;

P_p is the planned profit excluding risk;

I_n is the probability of profit loss because of adverse outcomes;

I_v is the probability of a successful outcome.

After determining the probability of risk its acceptable level could be chosen.

When making most management decisions it is recommended to adhere to the "average" level of risk when any possible losses of the planned profit do not exceed 50%. After determining the acceptable level of risk, its management system will be developed, which includes a subsystem of adaptation to risky situations.

The strategy of risk management is the art of risk management in an uncertain economic situation, based on the prediction of risk and methods to reduce it. Rules of risk management strategy are shown in Fig. 2.4.2.

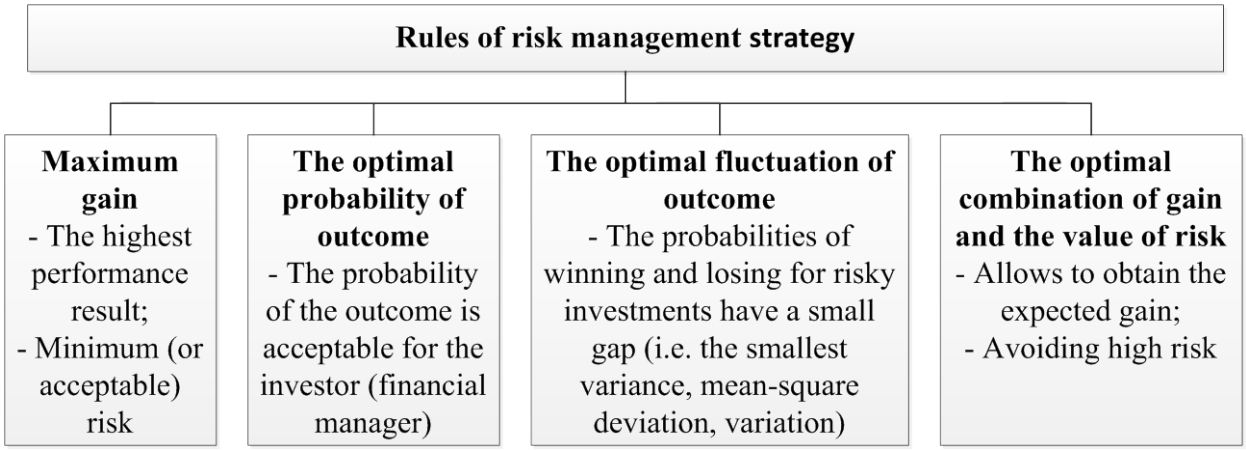

Figure 2.4.2. Rules of strategy risk management

The methods used in strategic risk management are shown in Fig. 2.4.3.

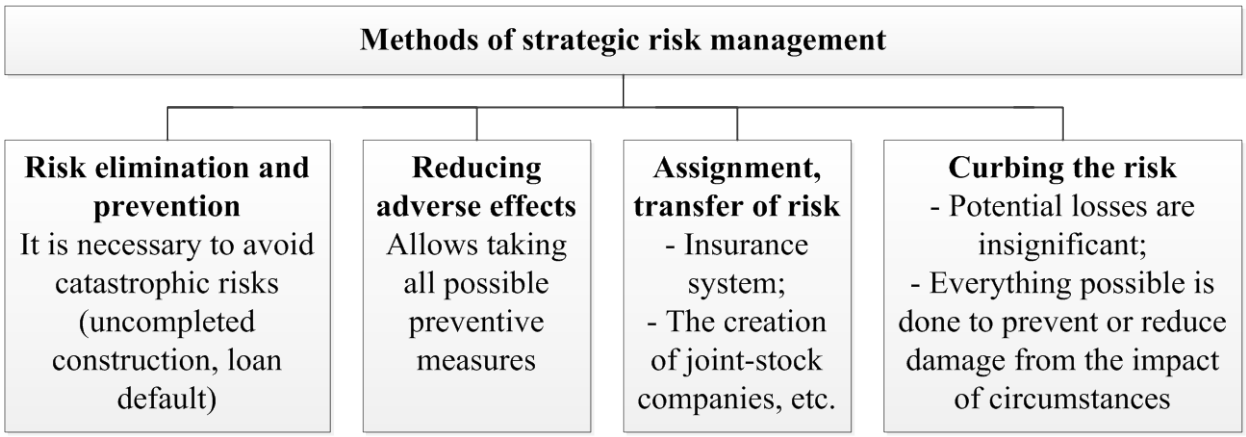

Figure 2.4.3. Methods of strategic risk management

All rules and methods described above aimed at reducing the risk of the investment project and increase its efficiency.

Topic 2.5. SOURCES AND MECHANISMS OF INNOVATION ACTIVITIES FUNDING AND FINANCING

Mechanisms of enterprises' own funding. Investing through depreciation. Mechanisms for mobilizing loans. Venture financing. Investment leasing. Mechanisms for mobilizing raised funds. State support for innovation activities.

Learning Objectives

After studying this chapter you should be able to:

1. Distinguish the difference between various types of innovations funding and financing
2. Determine the role of State support for innovation activities

Key words: *buyout, depreciation, finance lease, free cash flow, fundraising, venture capitalist*

Sources of financing of innovative enterprises vary depending on the stage of financing. There are three stages of innovative businesses financing and each of them include sub-stages. First (early) stage includes pre-seed, seed, start-up; second stage involves expansion / development; third stage incorporates buyout (management buy-in – MBI, management buyout – MBO, leveraged buyout – LBO). Type of financing interconnection with the stages of financing for innovative enterprises is presented in Figure 2.5.1.

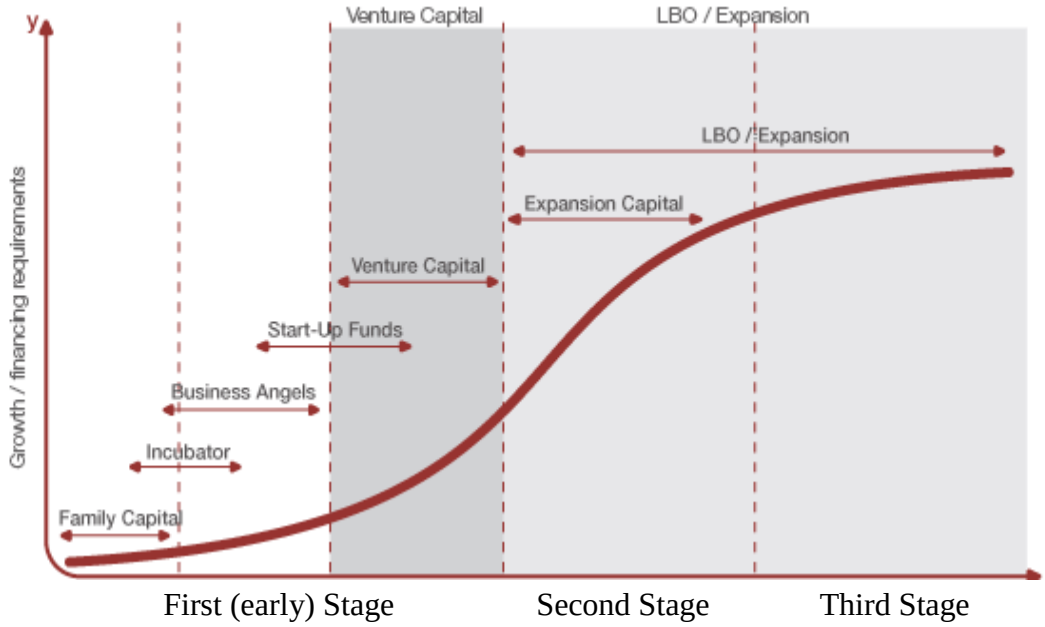

Figure 2.5.1. Type of financing and the stages of financing for innovative enterprises

Seed financing is the most difficult step of the financing small and medium innovative enterprises. The vast majority of financial institutions do not provide seed funding. Starting

innovative business is in the most difficult position because in addition to the standard set of risks it possesses an additional set of risks associated with innovation.

The simplest solution is when new business founders use their own funds on the first stage. However, in most cases these funds will not be enough, so in parallel the founders have to find other sources (Table 2.5.1). Therefore, own funds should be invested so that the attractiveness of the company to a third-party funding will be enhanced.

Table 2.5.1

Characteristics of seed financing sources

	Public	**Private**
Main requirements set by the source of funding	Achieving results within a limited time frame; Commercial attractiveness of developed product;	The maximum profitability at a controlled risk
The main sources of funds	Federal budgetary funds; Federal off-budget funds; Appropriate funds on municipal and local levels; Foreign public funds.	Funds from natural persons; Funds from private banks and credit institutions; Funds from investment companies and foundations; Funds from other private entities.
General terms and conditions	Full-marketing study of developed product (technology); Speedy passage of the initial stages of development and prototyping; Bringing developed products to the stage of signing preliminary contracts to supply them to customers.	
Conditions for loan		The acquisition of such assets which along with the effective participation in the company business may be the subject of a pledge or leaseback; The presence of stable income from other business activities that can ensure refund of the funds received as loan; Availability of guarantees and warranties from creditworthy individuals and organizations interested in results of innovative company activities.

For innovative business development the following funding sources can be used:

- public funding (subventions, grants, soft loans);
- commercial loan;
- targeted investments, strategic partnerships;
- venture capital investments.

Main characteristics of various sources of financing for development of innovative business are presented in Table 2.5.2.

Availability of credit increases sharply with the help of guarantee funds. These are specialized organizations whose financial resources are used not for the purposes of direct lending to small and medium-sized innovative enterprises but to issue financial guarantees to banks.

Table 2.5.2

Characteristics of various financing sources

Sources	Restrictions and requirements	Advantages	Disadvantages
Public financing (subventions, grants, soft loans)	Social significance; the company must meet certain standards; Funding can only be used for certain activities.	Could be obtained in the case when it is impossible to get funding from commercial sources; Usually requires smaller payment during longer term.	Restrictions on the use (purpose); Difficult to obtain; Usually a small amount of funding.
Commercial credit	The presence of liquid pledge; good credit history of the company; strict requirements for the predictive project development plan.	Flexibility in borrowing and loan servicing; Absence of operational control over the use of funds.	Risk of insolvency; High interest rates; requirements for liquid pledge.
Targeted investments, strategic partnership	Steady position on the market; Qualified and experienced management.	Using the investor's experience in given activity type.	Investor's control over the decision-making process; Difficult to exit for the investor.
Venture capital investments	The company must demonstrate: • potential growth; • unique ideas; • highly qualified managers	Could be made even if there is no pledge or guarantee; Comprehensive use of venture investor's experience.	Sufficiently long and complicated process of obtaining financing; Investor has the right to monitor the current management and to carry out personnel changes; Difficult to exit for the investor.

Financial leasing as a financing tool of business innovation

Leasing is a long term rental of machinery, equipment, vehicles, industrial facilities. Leasing company buys the equipment and makes it available for rent (in average, for 5-8 years) to the lessee, which gradually repays the debt with the use of property.

Upon completion of the lease, there are three options available:
1. buying property by the lessee on depreciated cost (ownership is transferred to the new owner);
2. extension of the leasing period;
3. return of the property to the leasing company.

Financial leasing is a contract providing for the payment of amounts sufficient for full depreciation of investment of the lessor before firmly set payment deadline and able to provide him a certain profit. Leasing company purchases equipment for the lessee company, while refund and payment of interests is made in the form of monthly lease payments, and after full repayment the equipment will to be owned by lessee.

When using a leaseback, equipment is purchased from the lessee with its subsequent return to the lessee for use.

The means of business angels as a source of financing for innovative business.

Business angels are wealthy people who invest their own money into private companies with significant growth potential at the initial stages of their development, usually without providing of any pledge.

A specific feature of this method of investing is that a business angel is not intended to extract the resulting company's profits during the first years of operation. His goal is to reinvest all profits earned by the company, to maximize the value of the company and, after a specified period, to sell his share in the company and increase manyfold his initial investments. This period is usually lasts 3-7 years.

Most of business angels are successful entrepreneurs who have considerable experience in the development of their own business. A smaller part of them are highly paid professionals in large companies, such as senior managers, consultants, lawyers, etc. According to Western studies the average age of business angels is 45-65 years. 99% of them are men, often divorced, every fifth one is a millionaire. Business angels are an important class of investors, filling the gap between the initial investments of company owners, their relatives and friends with subsequent funding sources such as traditional venture capital, bank financing, shares placement on the stock exchange, etc.

They got their name because a very few people besides them decide to invest in risky projects that do not have sufficient provisions. Sometimes it is just a good business idea, and everything on which business angel bases its decision, is a belief that the entrepreneur is able to realize his project. And the task of entrepreneurs wishing to attract investments in their project is to create this kind of confidence in a business angel.

Personal preferences of the investor play a significant role in the decision making because he chooses his partner for the next few years. Usually business angels acquire a minority stake (part of shares) of the new companies, as they are interested to make the entrepreneur motivated for carrying out his project. To ensure the control over their investments, business angels seldom buy less than a blocking set of shares. Thus, more often than they get from 25 to 49 % of company shares, depending on size of funds invested by business angel, entrepreneur's own funds, the degree of project risk and expected profitability. In some cases, the investor's share may be larger.

The amount which business angel usually invests is in the range from 20 thousand to several million dollars, and usually makes 5-20% of their available funds. Business angels make several investments, thus spreading their investments and reducing risk. Two-thirds of them consider projects that are located in their own region, i.e. within 1-2 hours' trip to the company. If investors have certain investment interests or invest in high-tech sector, they can consider more distant projects.

Interests of business angels cover a variety of activities. Approximately one third of the invested projects is based on new technologies. Business angels can make investments on their own behalf or through their companies, this can be related to taxation or happening due to other reasons.

Approximately one third of the investments is carried out through the involvement of two or more business angels. Thus larger projects can be financed and the risk for investors can be reduced.

After business angels have invested into a company its credibility rises and it becomes easier to attract additional funding from other sources. Business angels often use this tendency, for example by giving their guarantees for bank loans.

Participation of business angels in the company's management can be different and is discussed with its owners each time. Some of them may be involved in the daily management of the company or just be passive investors. In most cases, business angels are actively involved in the management of companies receiving their investments. The average time spent by the investor in the supported company is 3-8 hours per week. In addition to finances, business angels bring other invaluable contributions to the companies, including experience in the field of its operations and management skills, which companies usually lack at the initial stages, as well as their connections in the society. Many entrepreneurs say that the knowledge and experience of business angels are more important to them than finances.

Investment in innovation at the initial stages is an extremely profitable business, so business angels are primarily encouraged by significant financial benefits. The second reason motivating investors is a pleasure experienced from participating in the management of a growing company. Some business angels invest to secure their own working place but there are those who are willing to help a new generation of entrepreneurs.

Typically, business angels do not advertise their activities and appreciate anonymity. As a result it is impossible to estimate the real size of the informal investment market. However, according to available data, the number of active business angels in Europe estimated at 125,000 people. A number of investments made by them is 30-40 times more than the amount of investment of venture capital funds. The amount of potential business angels exceeds the number of active ones in 10 times. In the United States business angels make more than 80 % of the investment at the initial stages, and play an invaluable role in the development of small businesses. Many major companies such as Google, Apple, Amazon.com and many others can serve as an example of a business angels' investments.

Venture financing of innovative business

One of the most effective investment tools focused primarily at small and medium businesses with high growth potential, is venture financing. Venture capital is a type of private equity focused on start-up companies.

Throughout its history, venture capital investment has built entire industry sectors by funding breakthrough innovations. Thousands of start-ups in biotechnology, information technology and environmentally friendly technology got a start in life, improving the way we live and work every day. Below are just a few examples of well known companies that have been supported by venture capital (Figure 2.5.2).

Figure 2.5.2. New companies and new industries founded with venture capital.

The attractive feature of venture financing is that a venture capitalist can provide financing for a company even without any pledge. But by taking a high risk of the project, the investor also expects higher incomes.

Venture investments are made either in the share capital of the company in exchange for a share or block of shares, or are provided in the form of an investment loan. In practice a combined form of investment is very common.

The share of the a venture investor should allow him to control the company's activity through participation in the Board of Directors (with the aim of reducing the financial risks). Reduction of technical, market and other risks is achieved through the participation of venture (management) company in the management of financed enterprises. Thus, control over the strategic direction of activity is performed through participation in the Board of Directors. Enterprise's current activity is controlled through the budgeting system (control of current financial flows).

The process of interaction between venture capitalist and enterprise can be divided into several stages:

- preliminary assessment of the project by investor based on the summary of the business plan;
- careful study of the full version of the business plan by the investor if interest to the project appears (due diligence);
- preliminary discussion of the algorithm of investor's exit (buyout) from the project when the company will be developed enough and risk and income will decrease simultaneously and venture investor will want to transfer its money to another high-risk project; the company should be prepared to this event so that the investor will be able to get his money, not slowing down the enterprise's work or creating big financial problems.

Usually the most attractive projects are selected for investments. After that more detailed examination of each project and comparative analysis of business plans should be performed. As a result 2-4 projects are selected for further funding.

To avoid errors in the evaluation of projects, analysis of business plans should be conducted by professionally trained and experienced specialists.

In general the choice of financing source depends of the stage of the innovation project, as well as of company's financial history.

SEMINARS AND PRACTICAL ASSIGNMENTS

Seminar and Practical Assignment 1.1.
START-UP INNOVATION STRATEGY FORMULATION

Purpose:

- Acquisition of required theoretical knowledge and practical skills for formulation development strategy
- Development of managerial decisions to achieve the goals
- Acquisition of practical skills in collective decision-making.

Objectives:

- *Educational*: The development of cognitive interest, memory, alertness, logical thinking. Developing the ability to choose sources of additional information.
- *Training*: Deepening, generalization and systematization of knowledge in innovation management.
- *Cognitive*: Improving skills and increasing interest in process innovation development strategy of the enterprise.

Seminar structure:

1) *Theoretical part*: Theoretical material on features of start-up innovation strategy formulation
2) *Practical part*: Business game

1) Theoretical part

Innovation strategy is a long-term plan for action that defines choices on how to grow market share or profits through product and service innovation.

Innovation strategy is not about selecting activities to pursue that are different from those of competitors. This is the myth that misleads. Selecting activities is not strategy. An innovation strategy is about creating winning products, which means products that are in an attractive market, target a profitable customer segment, address the right unmet needs, and help customers get a job done better than any competing solution. Only after a company produces a winning product or service should it consider what activities are needed to deliver that product or service[6].

An effective strategy must correctly inform which job executor, job, and segment to target to achieve the most growth, and which unmet needs to target to help customers get the job done better. When it comes to creating the solution, an innovation strategy must also indicate whether a product improvement or a disruptive or breakthrough innovation approach is best. Unfortunately, most innovation strategies fail in these regards, which is why innovation success rates are anemic.

The following are five things that we believe make up a good innovation strategy[7]:

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[6] Keith Goffin, Rick Mitchell. Innovation Management, 2nd edition, 2010, 424 p.
[7] Rick Eagar, Frederik van Oene, Charles Boulton, Daniel Roos and Cindy Dekeyser. "The Future of Innovation Management: The Next 10 Years", 2011 // Electronic resource. Mode of access: http://www.adl.com/uploads/tx_extprism/Prism_01-11_Innovation_Management_01.pdf

1) An innovation strategy needs to be truly inspiring and should describe a desirable future state for the company.
2) The innovation strategy needs to be ambitious in terms of providing the basis to break away from the competition, beat the competition, and create new spaces.
3) The process of developing the strategy needs to be open. Being open is just a great way to raise the bar in terms of ambition and to more quickly get to more mature plans.
4) An innovation strategy must also be specific to the time in which it is developed, as it is grounded in the reality of a company's environment, and it reflects the available capabilities, technologies and gaps that may need to be filled.
5) An innovation strategy needs to be adaptive and to evolve over time.

Most organizations follow a similar process pattern when rethinking business, product and go-to-market strategies. These activities can be bundled into the following four key phases of strategy formulation[8]:

- *Scope*: Define the strategy formulation effort objectives, scope, approach, plan and roles.
- *Assess*: Understand the company's (and competitors') capabilities, current market, place in the value chain and strategic choices.
- *Innovate*: Identify and develop opportunities to protect and expand existing revenue streams and fundamentally improve competitive positions.
- *Mobilize*: Develop line of sight to the organization factors that influence the strategy and engage the business in its pursuit.

To formulate an effective innovation strategy, a company must know all its customers' needs, which needs are unmet, and what segments of customers exist with different unmet needs. But in most companies, managers can't agree on what a customer need even if, so of course they don't know what all those needs are, let alone which are unmet or what needs-based segments exist. Given this situation, there is no way they can successfully formulate an innovation strategy that will help customers get a job done better. And this is why companies focus on activities instead. Activities are something tangible that companies can control. Unfortunately, activities merely enable competitive advantage, they're not the reason for it.

2) Practical part: *Business game*

Business game is a method of organization of participants' active work in the training which aimed to produce certain work effectively recipes in their professional activities. Business game allows to organize the space of the training in a such way, which helps to the participants, based on their professional experience, can create a new product that will be a solution of their real problems. Business game always has a meaningful result, which is very important for the participants.

Procedure of the business game:

1. The coach formulates business problem to the group: Business partners are full of ideas, actively expressing them. But all ideas are different and contradictory. While partners are so keen in their vision and the idea, that they do not hear each other and cannot reconcile their

[8] Stig Ottosson. Handbook in Innovation Management – Dynamic Business & Product Development, 2006 // Electronic resource. Mode of access: http://complexityforum.com/aktuellt/handbook%20in%20innovation%20management.pdf

positions. This is a typical problem for the company's founders when they disagree about the company's development strategy. It can be a reason for the strong growth retardation.

2. Trainer divides participants into 2 teams group, gives the command name and embeds them in different corners of the training hall.

- ✓ First team – analogy with the first partner – adventurer.
- ✓ Second team – analogy with the second partner – conservative.

3. The coach formulates the question to each team and gives each team whatman papers and markers.

- ✓ First team – adventurers – will receive the following statement: "How can an adventurer persuade the conservative opt for the innovative development of the company? In this conservative should remain happy with my choice".
- ✓ Second team – conservatives – will get such a task: "Under what conditions you agree to opt for the innovative development of the company and will remain happy with it?".

During independent work of teams coach watches regulations and prepares a place performances.

4. The procedure of the above commands is as follows: the team must come up for 10 minutes as many ways to cope with the task. This is similar to brainstorming. They accept all participants' ideas, even the most bizarre and comical. Then within 10 minutes each participating team must prepare the presentation of their ideas using for this whatman paper. Welcome. Then comes the presentation – the representatives of each team in turn report to all the solutions that they come up with.

5. The coach comes to whatman papers and compare. Coach seeks to ensure that the whole group gets a real understanding of how to solve the problem.

Seminar and Practical Assignment 1.2.
MODELS AND STAGES OF INNOVATION PROCESSES

Purpose: To consolidate the knowledge on the theory of innovation cycle

1) Theoretical part

Note that not all innovations (innovative projects) pass full innovation cycle stages (T_{ic}). For specific innovation (specific innovator) innovation cycle can begin right from the first stage or the acquisition of patent or license to manufacture new products. Similarly, innovative project can be finished on a stage of commercial production (commercialization innovation) but also on selling the patent on new technical and (or) technological solutions or license. Possible choices of innovative enterprises actions with traditional (full) and shifted start-finish innovation cycle are shown in Figure S1.2.1 (stages of the innovation cycle are enlarged in Figure 1 compared to the same ones in the lecture material).

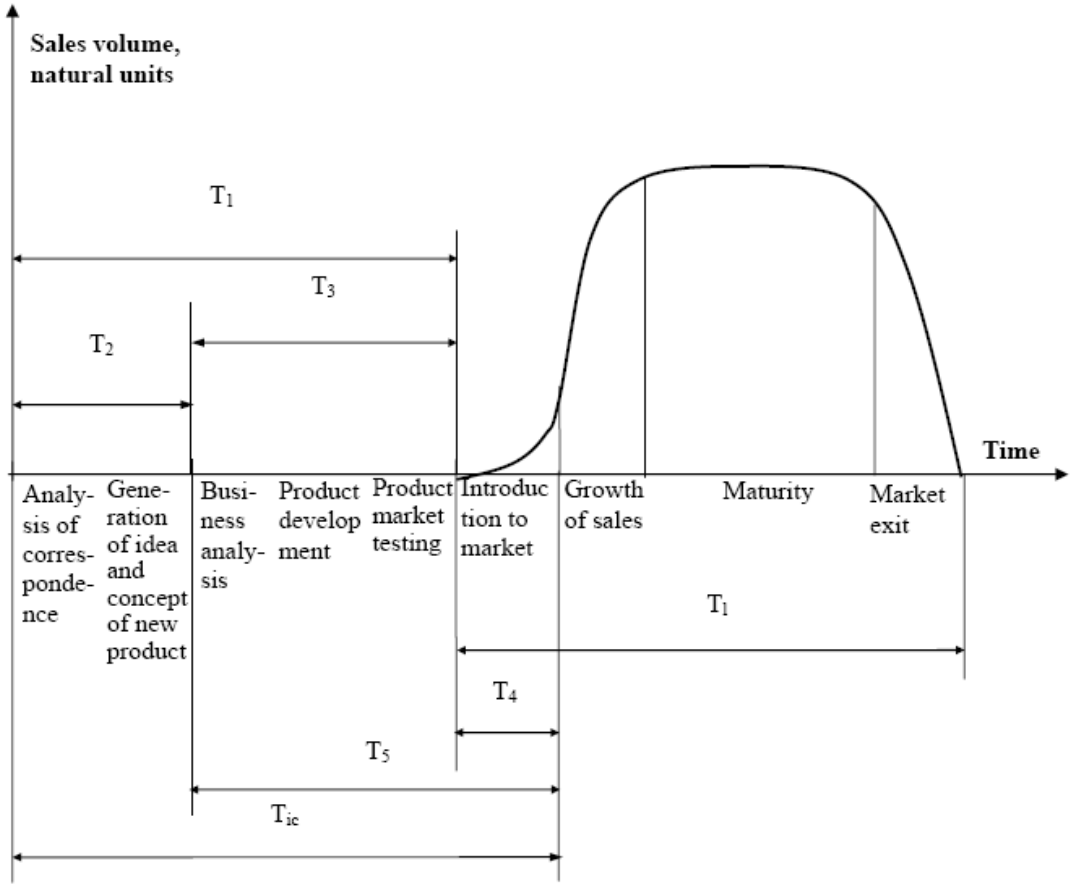


Figure S1.2.1. Innovation cycle variants

In Figure S1.2.1 the following notation is adopted:

T_1 – innovation cycle, which ends with the sale of a license for the right to manufacture a new product;

T_2 – innovation cycle, which ends with selling the patent on technical and (or) technological solutions;

T_3 – innovation cycle that begins with purchasing a patent for a new technology or a technical solution and ends with the sale of licenses for the production of a new product;

T_4 – innovation cycle that begins with purchasing of licenses and results in commercial production of a new product;

T_5 – innovation cycle that begins with purchasing of a patent and results in commercial production.

2) Practical assignment

Development of innovation and the life cycle schemes of a particular innovation (defining phases, their duration, works they include)

Students must produce the general scheme of innovative cycle (IC) and life cycle (LC) of goods, to provide steps specific for innovation, describe kinds of works performed at these stages, and prognosticate their duration.

Seminar and Practical Assignment 1.3.
NEW PRODUCT IDEA AND CONCEPT DEVELOPMENT. COMMERCIALIZATION OF INNOVATION

Purpose:

- to consolidate the knowledge on the theory of search and generation of ideas in practice
- acquisition of theoretical knowledge in the field of innovations commercialization

1) Practical assignment

Develop and justify the idea of the product, which, in your opinion, could have consumer demand and would be cost effective in production and sales. Based on the idea you need to formulate product concept. Determine the order of examination of the product concept.

Methodological guidelines. To generate product ideas both informal (intuitive) and formal methods may be used, including: improving the prototype, brainstorming, synectics, elimination of deadlocks, morphological maps. Examples of methods presented in lectures.
The work should be done by a group of at least four students.

2) Questions for discussion

1. Collection and analysis of information necessary for the commercialization of innovation. Factors contributing to innovation and contain it.
2. Evaluation of available resources needed to commercialize innovations. Innovations providers.
3. Finding sources of funding for the commercialization of innovative products.
4. Choosing commercialization form individually or using commercializing enterprise. Finding partners for commercialization.
5. Choosing commercialization method: licensing, engineering, franchising, leasing, sale of a patent, a joint venture, industrial cooperation, the establishment of a subsidiary companies, use at own enterprise.
6. Analysis of the innovative products sales market. Methods of market research, identifying explicit and implicit needs.
7. Selecting a target market, determine market saturation points and timing to market entry. Factors taken into account when forecasting demand.
8. Marketing of innovations.
9. Calculation of the commercialization efficiency.

Seminar and Practical Assignment 1.4.
ORGANIZATIONAL AND ECONOMIC CONDITIONS TO ENSURE THE IMPLEMENTATION OF INNOVATIONS

The seminar **aims** to provide students with critical skills in the field of creating favorable organizational and economic conditions for the implementation of enterprise’s innovations.

This aim is achieved through the realization of the **particular goals**:

- To outline to students the clear organizational and economic conditions that ensure effective implementation of innovations;

- To emphasize students' attention on practical aspects of the issues related to the creation of favorable conditions for innovations by identifying the efficient leverages for such innovation processes;
- To engage students in seminars through the methods of interactive learning. These methods aim to enhance their knowledge and skills and to develop their critical approach towards the creation of the conditions for the effective innovation activities.

Seminars' methodology.

The aim and the goals of the seminar will be achieved through the student's engagement in the discussions and increased interactions between the audience and the professor. The specific methods include interactive discussions; oral testing in class, project works, business games, presentations of students research and group discussions of topics and related questions.

The seminar's syllabus is designed to achieve its aims and goals through the range of activities. In particular, students' assignments include the issue-related discussions, the project work, general discussions, presentations, presentations' discussions, case studies, homework.

1) Issue-related discussions among the students aim to:

- Identify elements for creating certain innovation environment at an enterprise. Students are asked to summarize the factors for favorable innovation climate that is related to organizational culture.
- Determine team roles that could initiate and implement innovations. Students define the roles of team members, the team types, their size, the profile of team members and the ways of their interactions.
- Identify requirements for the establishment of the organizational innovation structure. Students compare the elements of traditional, bureaucratic and organizational structures with the contemporary structure types (business-process, team-oriented).
- Determine qualities of team-leader that contributes to the development of company's innovation spirit. Students think out the list of qualities inherent to the leader of a new type: the one, who can support innovative environment and implement innovations.
- Develop motivation tools to enhance innovation efforts of the team and its individual members. Students discuss the traditional and contemporary motivation techniques that provide incentives for the staff to implement innovations.
- Outline requirements for the innovation enterprises' planning system. Students elaborate the list of requirements that distinguish the efficient planning system from the inefficient one.
- Outline efficient control criteria for the enterprise that is working on the innovation process. Students define advantages and shortcomings of the different types of control and their applicability for the innovations' implementation.
- Explore economic conditions for innovations' implementation. Students provide details regarding the different types of resources in innovations.
- Search the sources for funding of innovation activity. Students identify the internal and external sources and analyze their applicability and limitations.
- Set up contacts with the partners for the efficient implementation of innovations.
- Identify the outsourcing options during the implementation of innovation idea.

2) The **project work** aims to determine the factors that contributes to the innovation efforts of staff and that have a negative impact on the innovations' development. Students are divided into two groups with the task to develop a *force-field model* (according to the principle of *force-field analysis* of Kurt Lewin). This model has to include the possible forces that incentivize innovation process and innovations' implementation (helping forces) as well as the forces that hamper and limit innovation activity (hindering forces). Provided time for the team work is 10 min. Following this group activity, a representative from the first group presents and writes down the hindering forces, whereas the members from the second group add to the presented list (Table S1.4.1).

Table S1.4.1

Forces-Field Model

Forces promoting innovations	Forces hindering innovations
• →	• ←

3) Discussion aims to follow-up on the previous task and focuses on the following topic: what are the ways to strengthen the influence of the *promoting forces* and to lower the impact of the *hindering forces*.

4) Students' presentations focus on the seminars' topics. One seminar includes the presentation of two-three topics; each presentation lasts up to ten minutes. The suggested topics for an individual research include:

- The feasibility of the outsourcing system during the innovation activity
- Team types and team roles during the innovation process
- Advantages and methods of the setting up of the business-process enterprises
- Leadership types and their influence on the process of development and implementation of innovation
- The sourcing of funding for innovations' implementation
- Cooperation and venture funds as the financial sources for the innovation enterprises
- The elements of innovation incubators and industrial parks: the national and international experience
- Reengineering of business-process as an innovative method for the business reorganization

5) General discussions and questions that are based on the above-mentioned topics.

Case studies include the following assignment. Students are divided into two-three teams; they outline the idea of innovation project, elaborate the overall program and the action plan with the details regarding the aims, timelines and resources for the implementation of the innovation project (financial, technical, material, labor). The time allocated for discussions is up to 15 minutes. The winning team is the one that presents a more convincing project with the more realistic aims and sources for its implementation. The following criteria are used for the project assessment:

- Originality of idea
- Feasibility of the project

- Clear goal setting
- Appropriate timeline management
- Determination in detail of the resources' needs.

Professor rates each project on a ten points scale together with students. In the end, the team that gets the highest number of points wins.

6) Finally, the seminar includes the summaries, general conclusion regarding the seminar's topics and homework.

Seminar and Practical Assignment 2.1.
SELECTING PRIORITY AREAS OF INNOVATION

Purpose:

- to consolidate the theoretical knowledge and practical skills to formulate development strategies
- development of managerial decisions
- acquisition of practical skills of decision-making within the team.

Tasks:

- *Educational:* development of cognitive interest, logical thinking, skills of independent information source selection.
- *Training:* deepening, generalization and systematization of knowledge in innovative process.
- *Cognitive*: Improvement of skills and growth of interest to innovative strategy development.

Seminar structure:

1) ***Theoretical par****t*: theoretical material on formulating the features of innovative activity for the enterprises
2) ***Practical part***: Business game.

1) Theoretical part.

Promotion of innovative products to the markets is connected with peculiarities of the relevant markets and the product itself. Thus it is necessary to consider that innovative product as result of innovative activity can become goods practically on all phases and stages of an innovative cycle and the market of innovations is most often new both for the seller, and for the buyer owing to novelty of offered goods. Besides, the market of innovations is rather narrow in comparison with other markets, especially for scientific, technological and knowledge-based industrial products. The market of innovations is characterized by the exclusive degree of result uncertainty (risk) caused by unpredictability of consumers reaction on an innovative product.

The company size has a great impact on choosing innovative activity strategy as the latter is different for small and large innovative enterprises with significant material and financial resources. Experience shows that the majority of small innovative enterprises work at separate stages of innovation life cycle. Large organizations often work at all stages of innovation life cycle.

Innovations in the field of information and communication technologies or consumer goods usually have short life cycle as updating of products in the market happens very quickly. The majority of small innovative companies is connected with production of short-time innovations because, owing to their flexibility, they can quickly switch to release of other product. Besides, the small innovative companies are limited in financial resources for introduction of innovations with long life cycle. Innovations with long life cycle are in demand for considerable initial investments but have impact on the market for a long time. The large companies are more interested in innovations with long life cycle which allow them to play an important role in the market during the longer period of time. Automotive industry where transition to new types of ecologically safe engines takes a long time can be an example and demands big initial investments. This approach defines also different marketing policy. As the small innovative enterprises enter already existing market of products, they have to advertize their product actively to occupy a certain share of the market. The large enterprises often themselves form the new market of products.

Distinction in innovations advancement by the small and large innovative enterprises defines a different approach to use of the intellectual property objects (OIP) and licenses. The small companies most often use its own patents. The large companies use both the patents developed by them and bought from external bodies if they see possibility to get a profit or for elimination of competitors.

To solve the problem of choosing an optimum option of OIP commercial use the following has to be carried out:

- the patent research aimed at definition of a technological level and tendencies of innovative activity objects development, their patentability, patent purity, competitiveness on the basis of patent and other information;
- the market research including studying and the analysis of competitiveness factors for developed new goods with use of inventions and other OIP, and also research of tactical market forming factors and prospects of its development during life cycle of inventions.

2) Practical part: Business game.

Procedure of business game:

1. The trainer formulates a business task: There is an innovation which can be used by the large company, or be a basis of start-up company. The owner of an innovation is thinking which way should be chosen for an innovation implementation.

2. The trainer divides participants into 2 teams: minimalists and maximalists.

3. Each team receives a necessary material to state their action strategy.

4. The first team receives a task: "How to prove to the large company manager an advantage of acquiring an innovation for the company and earning the maximum reward"

5. The second team receives a task: "It is decided to create a start-up company. It is necessary to choose a strategy of action when having the rights for intellectual property object"

Teams are given 15 minutes for the development of action strategy, production of arguments in their own favor, justifications of possibility to manufacture competitive products.

Then teams publicly report the arguments in favor of the chosen decision. Questions are asked by all group members. During the debate coach evaluates solutions and make sure that all participants have got a real understanding.

Seminar and Practical Assignment 2.2.
EXPERIENCE OF MANAGING INNOVATIONS IN THE DEVELOPED COUNTRIES

Aim: to provide students with critical skills in the field of creating innovation strategy of enterprises and economic conditions for their implementation in enterprise's activity.

Purpose:

- Acquisition of the necessary theoretical knowledge and practical skills to create innovative organization development strategy
- Development of administrative decisions on the strategic objectives of the company through the methods of interactive learning
- Acquisition of practical skills in the selection and construction strategies through collective decision-making.

Objectives:

- *Educational*: Development of cognitive interest, memory, alertness, logical thinking. Developing the ability to choose sources of additional information.
- *Training*: Deepening, generalization and systematization of knowledge in innovation management.
- *Cognitive*: Improving skills and increasing interest in process innovation development strategy of the enterprise.

Seminar structure:

1) Discussion aims to follow-up on the previous task and focuses on the following topic: what are the ways *to create innovative* organization development strategy

2) Students' presentations focus on the seminars' topics. Seminar includes the presentation of two-three topics; each presentation lasts up to ten minutes. Students should give an *examples of firm with experience of managing innovations in the Developed Countries (developing, transition economics) (Table S2.2.1).*

Table S2.2.1

№	*Strategy*	*Where has the strategy been applied*	*Product/Services where the strategy has been applied (give an example of companies from developed countries)*
1	Cost Leadership	Developing, transition and developed economics	Car industry (…) Airline business (…)

			Retail business (…) Telecommunications (…)
2	Differentiation	Developing, transition and developed economics	Car and Motor cycle (…) Computers (…) Retail business (…) Tourism and Hospitality (…)
3	Hybrid (Combination of Cost Leadership & Differentiation strategies)	Developing, transition and developed economics	Car industry (…) Furniture industry (…) Etc….

3) Business game

3.1. Theoretical part: Theoretical material on features of innovation strategy formulation through Bowman's Strategy Clock.

This model of corporate strategy extends Porter's three strategic positions to *eight*, and explains the cost and perceived value combinations many firms use, as well as identifying the likelihood of success for each strategy. Figure S2.2.1 below represents Bowman's eight different strategies that are identified by varying levels of price and value.

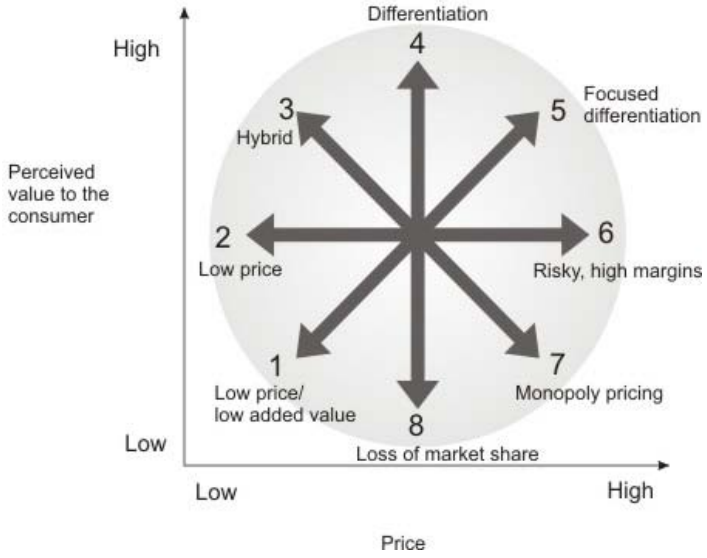


Figure S2.2.1. Bowman's Strategy Clock

Position 1: Low Price/Low Value

Firms do not usually choose to compete in this category. This is the "bargain basement" bin and not a lot of companies want to be in this position. Rather it is a position they find themselves forced to compete in because their product lacks differentiated value. The only way to "make it" here is through cost effectively selling volume, and by continually attracting new customers. You would not be winning any customer loyalty contests, but you may be able to sustain yourself as long as you stay one step ahead of the consumer (we are not going to mention any names here!) Products are inferior but the prices are attractive enough to convince consumers to try them once.

Position 2: Low Price

Companies competing in this category are the low cost leaders. These are the companies that drive prices down to bare minimums, and they balance very low margins with very high volume. If low cost leaders have large enough volume or strong strategic reasons for their position, they can sustain this approach and become a powerful force in the market. If they do not, they can

trigger price wars that only benefit consumers, as the prices are unsustainable over anything but the shortest of terms. “Walmart” (a huge North American network retailer) is a key example of a low price competitor that persuades suppliers to enter the low price arena with the promise of extremely high volumes.

Position 3: Hybrid (moderate price/moderate differentiation)

Hybrids are interesting companies. They offer products at a low cost, but offer products with a higher perceived value than those of other low cost competitors. Volume is an issue here but these companies build a reputation of offering fair prices for reasonable goods. Good examples of companies that pursue this strategy are discount department stores. The quality and value is good and the consumer is assured of reasonable prices. This combination builds customer loyalty.

Position 4: Differentiation

Companies that differentiate offer their customers high perceived-value. To be able to afford to do this they either increase their price and sustain themselves through higher margins, or they keep their prices low and seek greater market share. Branding is important with differentiation strategies as it allows a company to become synonymous with quality as well as a price point. “Nike” is known for high quality and premium prices; “Reebok” is also a strong brand but it provides high value with a lower premium.

Position 5: Focused Differentiation

These are your designer products: high perceived value and high prices. Consumers will buy in this category based on perceived value alone. The product does not necessarily have to have any more real value, but the perception of value is enough to charge very large premiums. Think Gucci, Armani, Rolls Royce. Clothes either cover you or they do not, and a car either gets you around the block or it does not. If you believe pulling up in your Rolls Royce Silver Shadow is worth 25 times more than in an economy Ford then you will pay the premium. Highly targeted markets and high margins are the ways these companies survive.

Position 6: Increased Price/Standard Product

Sometimes companies take a gamble and simply increase their prices without any increase to the value side of the equation. When the price increase is accepted, they enjoy higher profitability. When it is not, their share of the market plummets, until they make an adjustment to their price or value. This strategy may work in the short term, but it is not a long-term proposition as an unjustified price premium will soon be discovered in a competitive market.

Position 7: High Price/Low Value

This is classic monopoly pricing, in a market where only one company offers the goods or service. As a monopolist, you do not have to be concerned about adding value because, if customers need what you offer, they will pay the price you set, period. Fortunately for consumers in a market economy, monopolies do not last very long, if they ever get started, and companies are forced to compete on a more level playing field.

Position 8: Low Value/Standard Price

Any company that pursues this type of strategy will lose market share. If you have a low value product, the only way you will sell it is on price. You can not sell day-old bread at fresh prices. Mark it down a few cents, and suddenly you have a viable product. That is the nature of consumer behavior, and you will not get around it, no matter how hard you try.

Positions 6, 7, and 8 are not viable competitive strategies in truly competitive marketplaces. Whenever price is greater than perceived value you have an uphill battle on your hands. There will always be competitors offering better quality products at lower prices so you have to have your value and price aligned correctly.

3.2. Practical part:

1. Looking at Porter's strategies in a different way. Practically applied, Bowman's Strategy Clock provides examples of companies that implement all types of strategies

2. When considering which competitive strategy to pursue, here are some questions you should ask yourself.

If you intend to compete on price:

- Are you a price leader?
- Can you sustain a cost leader position? Can you control your costs and sustain a good margin?
- Are you able to exploit all of the cost advantages available to you?
- Can you balance low price against the perception of too low value?
- Is your cost advantage limited to one or a few small market segments? Are these segments capable of sustaining your business, given the volume and margins you project?

If you intend to compete on perceived value:

- Do you have a well-identified target market?
- Do you understand what your target market truly values?
- Are you aware of the perceived value of your competitor's products?
- Are there areas of differentiation that you can capitalize on that others cannot easily copy?
- Do you have alternate methods of differentiation in the event you lose your competitive advantage in that area?

As you are analyzing how you would like to position yourself, keep in mind your organizational competencies. While you may want to choose a focused differentiation strategy and market your "designer" goods, you need to understand that it takes a unique set of circumstances to establish that kind of reputation in the marketplace. You are better to compete in an area where your competitive strategy is congruent with your corporate strategy and competencies, the resources you have available to you, the environment in which you operate, and any market expectations you have already established.

4) General discussions and questions that are based on the above-mentioned topics.

5) Finally, the seminar includes the summaries, general conclusion regarding the seminar’s topics and homework.

Seminar and Practical Assignment 2.3.
THE ESSENCE OF THE LEGAL REGULATION OF INNOVATIONS

Purpose: to consolidate knowledge on the existing state innovation policy directions.

Objectives:

- to identify key areas of innovative activities support in the country, depending on the current innovation policy;
- develop a range of measures to support innovative activities depending on existing state innovation policy.

Procedure of business game:

1. Trainer formulates the problem for the group: the country's leadership task is to choose a variety of innovative policies that would be optimal for the current stage of development. As always, there are supporters of various innovative policies.

2. Facilitator divides participants into 3 groups and separates them into different parts of the room where the training is conducted.

The first team represents a group of MPs who support the innovation policy of "technological push".

The second team represents a group of MPs who support the innovation policy of "market orientation".

The third team represents a group of MPs who support the innovation policy of "structural changes".

3. Trainer formulates the problem for all teams, announces the working procedure and gives each team tools (sheets of drawing paper and markers or other means).

Each team has to:

- identify a list of measures to support innovative activities within the selected innovation policy;
- determine why this particular innovation policy is optimal at the present stage of development of the state and what can be achieved due to it;
- prepare counterarguments against opponents and their innovation policy.

4. The teams working procedure as follows: within 40 minutes they have to solve their tasks and prepare a presentation of their innovation policy using a sheet of drawing paper or other tools.

5. Presentation. Representative (group of representatives) of each team must deliver a speech Parliament (or other supreme legislative body of the country (in the frames of trainings, Parliament should be presented by the other trainees who are currently not making the presentation)) and justify their ideas and considerations. The other participants ask questions, express their disagreement with given policy, substantiating their opinion.

6. Trainer summarizes the results obtained during the training, and expresses his opinion concerning the arguments and counterarguments of the teams.

Seminar and Practical Assignment 2.4.
EVALUATING THE INNOVATIONS EFFICIENCY

Purpose: To learn how to assess the cost-effectiveness of innovation projects.

Objectives:

- to consolidate knowledge on methods for evaluating the efficiency of innovative projects;
- to calculate the cost-effectiveness of the project using a variety of methods.

Task 1.

Firm "Kama" buys a new computer and software to be used only for accounting automation for 12.6 thousand euros. It is planned to get savings of book-keeping (by reduction of this service staff and wage fund) of 5.0 thousand euro per year over the next five years.

Required: to determine how expedient is such an investment if the average rate on bank deposits is 35 % per annum.

Task 2.

Based on initial data in table S2.4.1, the following tasks have to be performed:

1. To calculate the net present value (NPV), payback period (PP), discounted payback period (DPP) and the profitability index (PI) of innovative projects A, B and C. The project discount rate is 14 %.

2. To create analytical opinion on the investment attractiveness of alternative options for capital investments.

Table S2.4.1

The initial investment costs (-) and cash flow (+,-) (thousands of euros)

Period of time (t), years	Project A	Project B	Project C
0	-250 000	-250 000	-250 000
1	+50 000	+200 000	+125 000
2	+100 000	+150 000	+125 000
3	+150 000	+100 000	+125 000
4	+200 000	+50 000	+125 000

Seminar and Practical Assignment 2.5.
EVALUATING THE EFFICIENCY OF INVESTMENTS IN INNOVATION PROJECT

For (venture) investors it is important to analyze the effectiveness of investments. The essence of this procedure is to compare them with alternative investments opportunities. To do this, use the following methods of investment appraisal: **NPV** and **IRR**.

NPV means Net Present Value. NPV method is a discounted cash flow from the project to the investor over the predictive period from the beginning of investment to output. If NPV ≥ 0, the investment decision is taken.

IRR means Internal Rate of Return. IRR is the maximum level of prices of capital (discount rate) at which the project with the specified flow of funds to the investor will have a commercial interest for him.

NPV

The difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of an investment or project.

NPV analysis is sensitive to the reliability of future cash inflows that an investment or project will yield.

Formula for calculation:

$$NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_0$$

In addition to the formula, net present value can often be calculated using tables, and spreadsheets such as Microsoft Excel.

Important to know

NPV compares the value of a dollar today to the value of that same dollar in the future, taking inflation and returns into account. If the NPV of a prospective project is positive, it should be accepted. However, if NPV is negative, the project should probably be rejected because cash flows will also be negative.

For example, if a retail clothing business wants to purchase an existing store, it would first estimate the future cash flows that store would generate, and then discount those cash flows into one lump-sum present value amount, say $565,000. If the owner of the store was willing to sell his business for less than $565,000, the purchasing company would likely accept the offer as it presents a positive NPV investment. Conversely, if the owner would not sell for less than $565,000, the purchaser would not buy the store, as the investment would present a negative NPV at that time and would, therefore, reduce the overall value of the clothing company.

IRR

The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are equal among

the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

IRR is sometimes referred to as "economic rate of return (ERR)".

You can think of IRR as the rate of growth a project is expected to generate. While the actual rate of return that a given project ends up generating will often differ from its estimated IRR rate, a project with a substantially higher IRR value than other available options would still provide a much better chance of strong growth.

IRRs can also be compared against prevailing rates of return in the securities market. If a firm can not find any projects with IRRs greater than the returns that can be generated in the financial markets, it may simply choose to invest its retained earnings into the market.

IRR Calculation

The calculation of IRR is a bit complex than other capital budgeting techniques. We know that at IRR, Net Present Value (NPV) is zero, thus:

$$\mathbf{NPV = 0};$$

or

$$\mathbf{[PV\ of\ future\ cash\ flows] - [Initial\ Investment] = 0};$$

or

$$\left[\frac{\mathbf{CF_1}}{\mathbf{(1+r)^1}} + \frac{\mathbf{CF_2}}{\mathbf{(1+r)^2}} + \frac{\mathbf{CF_3}}{\mathbf{(1+r)^3}} + \mathbf{...}\right] - \mathbf{[Initial\ Investment] = 0}$$

Where

r is the internal rate of return;
$\mathbf{CF_1}$ is the period one net cash inflow;
$\mathbf{CF_2}$ is the period two net cash inflow,
$\mathbf{CF_3}$ is the period three net cash inflow, and so on ...

But the problem is that we cannot isolate the variable **r** (internal rate of return) on one side of the above equation. However, there are alternative procedures which can be followed to find IRR. The simplest of them is described below:

1. Guess the value of r and calculate the NPV of the project at that value.
2. If NPV is close to zero then IRR is equal to r.
3. If NPV is greater than 0 then increase r and jump to step 5.
4. If NPV is smaller than 0 then decrease r and jump to step 5.
5. Recalculate NPV using the new value of r and go back to step 2.

Practical Example.

Find the IRR of an investment having initial cash outflow of $213,000. The cash inflows during the first, second, third and fourth years are expected to be $65,200, $96,000, $73,100 and $55,400 respectively.

Solution

1. Assume that r is 10%.
2. NPV at 10% discount rate = $18,372
3. Since NPV is greater than zero we have to increase discount rate, thus
4. NPV at 13% discount rate = $4,521
5. But it is still greater than zero we have to further increase the discount rate, thus
6. NPV at 14% discount rate = $204
7. NPV at 15% discount rate = ($3,975)
8. Since NPV is fairly close to zero at 14% value of r, therefore
9. IRR ≈ 14%

RECOMMENDED OR REQUIRED READING

For Topic 1.1.:

1. Trott P. Innovation Management and New Product Development, 3rd ed., Upper Saddle River, NJ : Financial Times Prentice Hall, 2005., 536 p.
2. Wouter Koetzier & Christopher Schorling. 5 Key Points to Consider when Developing an Innovation Strategy // Mode of access: http://www.innovationmanagement.se/2013/07/03/5-key-points-to-consider-when-developing-an-innovation-strategy.
3. Victor Cascella and Edoardo Monopoli. Innovation Strategy: Finding a Dogma-free View // Mode of access: http://www.triz-journal.com/content/c090427a.asp

For Topic 1.2.:

1. Marian Underweiser, Richard M. Ludwin, Marc A. Ehrlich *Understanding the Innovation Cycle* Electronic resource. Mode of access: http://www.thersa.org/__data/assets/pdf_file/0020/126542/IBMinnovationcyclesfinal.pdf
2. Merrill, Peter (2008) *Innovation generation: creating an innovation process and innovative culture* pp. 59-105. Electronic resource. Mode of access: http://books.google.com.ua/books?id=4WBpKMnbOJgC&pg=PA39&dq=innovation+process+stages&hl=ru&sa=X&ei=Z7nNUo_eKsap4AT5goHIAw&ved=0CC8Q6AEwAA#v=onepage&q=innovation%20process%20stages&f=false
3. Fernando Trias de Bes, Philip Kotler (2011) *Winning at Innovation: The A-to-F model*. pp. 13-20, 156-159. Electronic resource. Mode of access: http://books.google.com.ua/books?id=KGaD5gTng-QC&pg=PA15&dq=innovation+process+stages&hl=ru&sa=X&ei=Z7nNUo_eKsap4AT5goHIAw&ved=0CFoQ6AEwBg#v=onepage&q=innovation%20process%20stages&f=false

For Topic 1.3.:

1. Girotra K., Terwiesch Ch., Ulrich Karl T. (2010) 'Idea generation a the quality of the best idea' *Management science*, Vol. 56, Issue 4, pp. 591-605 Electronic resource. Mode of access: http://pubsonline.informs.org/doi/ref/10.1287/mnsc.1090.1144
2. Merrill, Peter (2008) *Innovation generation: creating an innovation process and innovative culture* pp. 59-105. Electronic resource. Mode of access: http://books.google.com.ua/books?id=4WBpKMnbOJgC&pg=PA39&dq=innovation+process+stages&hl=ru&sa=X&ei=Z7nNUo_eKsap4AT5goHIAw&ved=0CC8Q6AEwAA#v=onepage&q=innovation%20process%20stages&f=false
3. Roberta B. Ness (2012) *Innovation generation: How to produce creative and useful scientific ideas*. Electronic resource. Mode of access: http://books.google.com.ua/books?id=OFeCxfIZgn0C&printsec=frontcover&dq=generation+of+idea&hl=ru&sa=X&ei=0b7OUoWTB-jl4QS6qYHgDQ&ved=0CFkQ6AEwBg#v=snippet&q=generation%20of%20idea&f=false
4. Ideation Electronic resource. Mode of access: http://en.wikipedia.org/wiki/Ideation_%28idea_generation%29

For Topic 1.4.:

1. Jari Kettunen, Kaisa Ilomaki, Petri Kalliokoski. Making Sense of Innovation Management. Helsinki: Teknologia teollisuuss, 2007
2. Drucker Peter, Innovation and entrepreneurship. Practice and principles. New York: Harper&Collins Publishers Inc. 1993. – Mode of access: http://rutracker.org/forum/viewtopic.php?t=3079845.
3. Christiansen J.A. Building the innovative organization: Management systems that encourage innovation. N.Y.: St. Martin`s Press, 2000
4. Daft R., Menedgment, SPb.: Piter, 2009
5. Innovatsionniy menedgment.Uchebnoye posobiye pod red. Baryshevoi A.V., Moskva, 2007
6. Surin A.V., Molchanova O.P. Innovatsionniy menedgment. Moskva: Infra-M, 2008
7. Managing Creativity and Innovation (Harvard Business Essentials), Boston, Massachussetts, 2003 - Mode of access: http://www.amazon.com/Managing-Creativity-Innovation-Business-Essentials

Other Internet based materials:

8. Electronic Resource. Mode of access: http://www.bizeducation.ru/library/management/innov/4/ideya.htm
9. Electronic Resource. Mode of access: http://do.gendocs.ru/docs/index-32797.html?page=13

For Topic 2.1.:

1. Jonathan Birkin Business Advantage. Intermediate. Teacher's Book: Cambridge University Press, 2012.– 160 p. ISBN: 978-1-107-63770-2
2. Jane Cordell. Cambridge Business English Activities: Serious Fun for Business English Students. Cambridge University Press, 2011. ISBN: 978-0-521-58734-1
3. Corporate strategy. SAGE library in Business and Management //Editor Jeffrey A Krug. / James Neelankavill, Roger Bennett, Dan Kipley, Alfred Lewis, Harvard Business R. SAGE Publications, 2008.-1176 p.
4. Daniel Goleman. Emotional Intelligence in business .Mann, Ivanov and Ferber. 20013.-234 p.
5. L. Lewis Market Leader. Upper Intermediate. Test File. Pearson , 2011.- 44 p.

For Topic 2.2.:

1. Bowman and D. Faulkner. Competitive and Corporate Strategy - Irwin - 1996

For Topics 2.3. and 2.4.:

1. Drucker Peter. Innovation and Entrepreneurship // Mode of access: http://ua.bookfi.org/book/1303970
2. Goldshtein G. Innovation Management (rus) // Mode of access: http://www.aup.ru/books/m23/
3. Muhamedyarov A. Innovation Management (rus) // Mode of access: http://www.alleng.ru/d/manag/man182.htm

For Topic 2.5.:

1. Agarkov S. A., Kuznetsova E.S., M.O. Hraznova Innovation management and state innovation policy Publisher "Academy of Natural History", 2011. Mode of access: http://www.rae.ru/monographs/112
2. European Private Equity and Venture Capital Association (EVCA). Mode of access: http://www.evca.eu
3. Glossary Venture Entrepreneurship in 2009. Mode of access: http://www.allventure.ru/ucheb/20/#replies_page1
4. National Venture Capital Association (NVCA). Mode of access: http://www.nvca.org/
5. Peter Drucker Innovation and Entrepreneurship Principles and Practices, 1985 - Business & Economics - 277 pages.

GLOSSARY

For Topic 1.1.:

Business environment is the combination of internal and external factors that influence a company's operating situation.

Customer base is the group of customers who repeatedly purchase the goods or services of a business. These customers are a main source of revenue for a company.

Frugal innovation or frugal engineering is the process of reducing the complexity and cost of a good and its production.

Innovations are new or advanced technologies, types of production or services, and also the organizational technical solutions of production, administrative, commercial or other types promoting technologies, products and services on the market.

Integrated Innovation is the coordinated application of scientific/technological, social and business innovation to develop solutions to complex global health challenges.

Marketing strategy implementation is traditionally considered as the "'doing" stage in the planning process and follows the "dreaming" stage, commonly referred to as strategy formulation.

New product development (NPD) is the complete process of bringing a new product to market. A product is a set of benefits offered for exchange and can be tangible (that is, something physical you can touch) or intangible (like a service, experience, or belief).

Product adaptation occurs when a company modifies a product for a foreign market.

Socio-economic impact assessment focuses on evaluating the impacts development has on community social and economic well-being.

Technology is the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function.

For Topic 1.2.:

The innovation process is the process of creation (development and production) and of commercialization of innovations embodied in new products, technology, management, etc., which have customer value.

Idea is a general concept of the product that can be offered on the market.

Innovative product concept is considered as innovation idea easily understandable for consumers

For Topic 1.3.:

Prototype improvement is a method of searching for innovative ideas based on identifying prototype (the best model on the market) drawbacks and finding ways to improve it.

Brainstorming is a method of searching for innovative ideas based on the group generation of ideas to solve the problem (assuming the prohibition of ideas criticism), followed by their assessment.

Synectics is a method of searching for innovative ideas based on orientation of group of professionals spontaneous intellect functioning (with various types of analogies) for the analysis and solution of the given problem.

Elimination of the dead-lock situations is a method of searching for innovative ideas based on the search for new solutions if traditional ones are not effective

Morphological maps is a method of searching for innovative ideas based on the expansion of problem solution search area

For Topic 1.4.:

Innovative Climate is defined as the working conditions established during a certain period of time that contribute to fostering the creativity environment, to the changes and innovations.

Organizational Culture of innovation team is an integral characteristic that includes the system of values, behavioral modes of employees, management type, the features of control system, assessment modes and motivation system.

Co-creative Type of Activity represents the staff interactions where each employee enhances his/her own professional competency on the account of collective activity.

Model of Horizontal Connections is a model of employees' interactions, in which the employees of different departments of a company all together contribute into the emergence of innovation products and process.

Rapid Cycle Teams are the type of teams in innovation management that have additional resources and powers to finalize the innovation project early.

Idea Incubator is a place where the employees of different company's levels are gathering to produce innovative ideas without any company bureaucracy pressure or interference

For Topic 2.1.:

Business-incubator; firm-incubator is the subject of innovative infrastructure created for the purpose of formation of the new enterprises, workplaces and economic development of the region on the basis of a complex method of the organization of innovative process.

The invention is the technical solution which is new, having legal protection, inventive level and is industrial application

Investments of innovations is the set of the material and intellectual values invested in implementation of the innovative project

Life cycle of production is the set of the interconnected processes describing consecutive change of a production condition from initial requirements to utilization.

Innovative activity is the activity providing creation and realization of innovations.

Innovative infrastructure is the set of subjects which is carrying out material, technical, financial, organizational and methodical, information, consulting, etc. works aiming the implementation of innovative activity.

The innovative sphere is the sphere of activity of producers and consumers of innovative products (works, services), including creation and distribution of innovations.

The innovative enterprise is the enterprise (association of the enterprises), developing, making and realizing innovative products and (or) services.

Innovative marketing is the identification and research of the innovations market, development of the marketing offer on innovation commercialization.

Innovative management is the set of the principles, methods, means and control methods aiming the increase of investments efficiency enclosed in its realization.

Innovative potential is a set of different resources including the material, financial, intellectual, scientific and technical and other ones necessary for implementation of innovative activity.

Innovative process is the process of consecutive work on transformation of an innovation to production and its promotion on the market for commercial application.

Intellectual property is the set of exclusive rights on results of creative activity, production, performed works and services.

Competitiveness of production is the ability of production to meet the market requirements

The licensor is the party transferring to the licensee a right to use object of intellectual property according to the license agreement

The licensee is the party acquiring a right to use object of the license according to the license agreement.

The license agreement is the agreement or the contract under which one party transfers to other party a right to use object of the license under certain conditions.

Marketing is the control system of production and marketing activity based on the complex analysis of the market and providing efficiency of realization of production through satisfaction of needs and needs of the consumer.

Quality management is the coordinated activities for the management and management of the organization in relation to quality.

Scientific activity is the creative activity directed on receiving new knowledge of the nature, the person, the society, artificially created objects and on use of scientific knowledge for development of new ways of their application. Scientific research can be fundamental and applied.

The scientific organization is the legal institution to carry out performance of research, developmental and technological works, and which has necessary facilities and staff (in some countries the procedure of accreditation exists).

Know-how is the technical, organizational or commercial information having the real or potential commercial value owing to uncertainty to its third parties which isn't present a free

access legally; the owner of information takes appropriate measures to protection of its confidentiality.

Organizational innovation is the innovation connected with creation or improvement of the organization and production management, processes, a manpower.

Patent research (of production) is the research of a technological level and tendencies of production development, its patentability, patent purity and competitiveness.

Patentability is the compliance of estimated industrial property to the criteria necessary for receiving legal protection by the patent legislation of the concrete country (region).

The consumer (of production) is the legal or natural person using this production for designated purpose.

Consumer properties of production is the set of technical, esthetic and other properties of production creating its useful effect and appeal to consumption.

Product innovation is the innovation connected with development and deployment of new or advanced production (products) or other enterprises already realized in work practice and which can be promoted through technological exchange (unlicensed licenses, a know-how, consultations).

Technological park is the subject of innovative infrastructure which is carrying out formation of conditions, favorable for business development in the scientific and technical sphere in the presence of the equipped information and experimental base and high concentration of qualified personnel.

Satisfaction of consumers is the correspondence of consumers' implementation to their product requirements.

For Topic 2.2.:

Bowman's Strategy Clock is a model used in marketing to analyses the competitive position of a company in comparison to the offerings of competitors.

Business angels are private investors putting money into innovative projects start-ups in exchange for a return of investment and share in the capital.

Combination strategy: many organizations pursue a combination of two or more strategies simultaneously, but a combination strategy can be exceptionally risky if carried too far.

Commutants are small, non-specialized companies which are very flexible and use any possibilities for business.

Competitive advantage: according to Michael Porter, competitive advantage can be gained through sharing opportunities among a firm's existing and potential business units. Porter's five-forces model addresses the means for gaining competitive advantage in organizations.

Cost Leadership is the strategy of producing goods at a lower cost than one's competitors

Differentiation Strategy is one of three generic strategies in which a firm strives to create and market unique products/services for various customer groups.

Explorers are the pioneers of business which strategies are oriented on risky innovations based on applying the newest highly-efficient technologies leading to maximum profit and venture investments.

Focus Strategy is one of three generic strategies in which a firm tries to appeal to one or more customer groups focusing on their cost or differentiation concerns.

Focused Strategy Based on Differentiation: differentiation (quality, brand and customization) depending on its resources and capabilities.

Focused Strategy Based on Cost Leadership: concentrating on a narrow buyer segment and out competing rivals by serving niche members at lower cost than rivals.

Patients are placed into (tied to) niche specialism and production of small batch of elite goods and overcharge purchasers

Product Life Cycle Analysis is a forecasting technique which analyzes/predicts the performance of a product/service during each stage of its development.

Scientific organization is the organization (institution, enterprise, company) for which the R&D is the main activity.

Stakeholder is a person, group, or business that has an interest in the outcomes of a firm's operations.

Violents: defined as a firm with a "power" strategy, engaged in large-scale and mass production of products for a wide range of consumers, impose "middle terms" for quality and are satisfied an average price level

For Topics 2.3. and 2.4.:

Break-even point is the critical output in physical units, production and sale of which provides a break-even enterprise management.

Cost-effectiveness of innovation is the ratio of economic benefit from innovation to the cost of implementation.

Discounting is the method of bringing the future value of money to their present value.

Innovation project (the document) is a set of technical, organizational-legal and accounting-financial documentation required for the project.

Innovative activities – for proof of scientific and technical ideas, inventions, developments to result suitable for practical use.

Innovative project is a complex system of interrelated and interdependent in resource terms and executing measures to achieve specific goals (tasks) on priority directions of science and technology.

Kondratiev cycle – averaging fifty and ranging from approximately forty to sixty years, the cycles consist of alternating periods between high sectoral growth and periods of relatively slow growth.

Nominal interest rate is the current market rate without inflation.

Payback period is an indicator of the effectiveness of innovative investments that characterizes the period during which they fully return.

Process of implementation of innovations is a set performed in a certain sequence of scientific, technological, industrial, institutional, financial and commercial steps to innovation.

Rate of return (internal rate of return) is one of the most important indicators for evaluating the effectiveness of innovative investments. It measures the rate of return on a particular innovative solutions, resulting discount rate at which future cash flow value of innovation is reduced to the present value of the invested assets.

State Innovation policy is a set of forms and methods of state activity aimed at creating inter institutional mechanisms, resource support and development of innovation, the formation of motivational factors intensify innovation processes

For Topic 2.5.:

Business angel. A private investor who provides both finance and business expertise to an investee company.

Buyout. A buyout is a transaction financed by a mix of debt and equity, in which a business, a business unit or a company is acquired with the help of a financial investor from the current shareholders (the vendor). See management buyout (MBO), management buyin (MBI), institutional buyout (IBO), leveraged buyout (LBO).

Commitment. A limited partner's obligation to provide a certain amount of capital to a private equity fund when the general partner asks for capital.

Depreciation.

1. A method of allocating the cost of a tangible asset over its useful life. Businesses depreciate long-term assets for both tax and accounting purposes.
2. A decrease in an asset's value caused by unfavorable market conditions.

Due diligence. For private equity professionals, due diligence can apply either narrowly to the process of verifying the data presented in a business plan/sales memorandum, or broadly to complete the investigation and analytical process that precedes a commitment to invest. The purpose is to determine the attractiveness, risks and issues regarding a transaction with a potential investee company. Due diligence should enable fund managers to realise an effective decision process and optimise the deal terms.

Finance lease is a lease which meets at least one of the following criteria

- ownership of the asset is transferred to the lessee at the end of the lease term;
- the lease contains a bargain purchase option to buy the equipment at less than fair market value;
- the lease term is for the major part of the economic life of the asset even if title is not transferred;
- at the inception of the lease the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset.

- the leased assets are of a specialised nature such that only the lessee can use them without major modifications being made.

Free cash flow. Free cash flow is defined as the after-tax operating earnings of the company, plus non-cash charges (e.g. depreciation), less investment in working capital, property, plant and equipment, and other assets.

Fundraising. The process in which venture capitalists themselves raise money to create an investment fund. These funds are raised from private, corporate or institutional investors, who make commitments to the fund which will be invested by the general partner.

Private equity. Private equity is a form of equity investment into private companies that are not quoted on a stock exchange.

Round of Financing (or Round). "Stage or round of Financing" – the first stage of financing is the initial mobilization of external capital. Successful stage funding can attract all kinds of investors as the "maturation" of the company. (Bridge Financing, First Stage/Round, Latter-Round Financing, Management Buyin, Management Buyout, Replacement Capital, Second Stage/Round, Third Stage/Round)

Venture capital.

1. a segment of the private equity industry which focuses on investing in new companies with high growth potential and accompanying high risk.
2. professional equity co-invested with the entrepreneur to fund an early-stage (seed and start-up) or expansion venture. Offsetting the high risk the investor takes is the expectation of higher than average return on the investment. Venture capital is a subset of private equity.
3. a type of private equity focused on start-up companies.

Venture capitalist. The manager of private equity fund who has responsibility for the management of the fund's investment in a particular portfolio company. In the hands-on approach (the general model for private equity investment), the venture capitalist brings in not only moneys as equity capital (ie without security/charge on assets), but also extremely valuable domain knowledge, business contacts, brand-equity, strategic advice, etc.

TESTS (for Self-testing packages)

For Topic 1.1.:

State, with reason in brief whether the following statements are True or False:

1. Innovation can only happen in the research laboratories of large firms **(False)**
2. Technological advance is not the only factor creating the need for innovation **(True)**
3. Just-in-time (JIT) manufacturing system is an example of production innovation **(True)**
4. Introducing a new model TV set would be an example of radical innovation **(False)**
5. The use of nanotechnology to create self-cleaning windows is an example of product innovation **(True)**
6. Total quality management is an example of process innovation **(False)**
7. Innovation is always driven by the profit motive **(False)**
8. The R&D department or the "creative types" in marketing is the base of innovation. **(False)**

9. Innovations always based on change **(True)**
10. The importance of customers' needs knowledge is a key factor influencing the decision of innovation activities **(True)**

For Topic 1.2.:

1) Complete list of the stages of innovation cycle *with the missing elements*:

1. …….
2. Innovative ideas generation
3. …….
4. …….
5. Market analysis and development of marketing strategies
6. …….
7. New product development
8. …….
9. The deployment of commercial innovations production

Correct answer:

1. Analysis of correspondence between internal and external development opportunities
2. Innovative ideas generation
3. Selection of acceptable innovative ideas
4. The development of a new product concept and its verification
5. Market analysis and development of marketing strategies
6. Assessment of the possibilities of the marketing strategy objectives achievement
7. New product development
8. Testing of innovation in market environment
9. The deployment of commercial innovations production

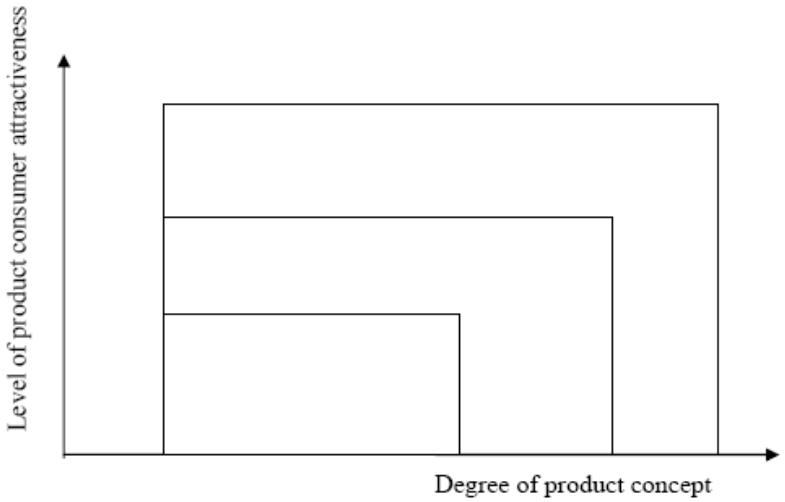
2) What is the main task of SWAT-analysis?

a) Assessment of company's internal development opportunities
b) Assessment of company's external development opportunities generated by the market
c) Assessment of correspondence of company's internal development opportunities and external generated by the market

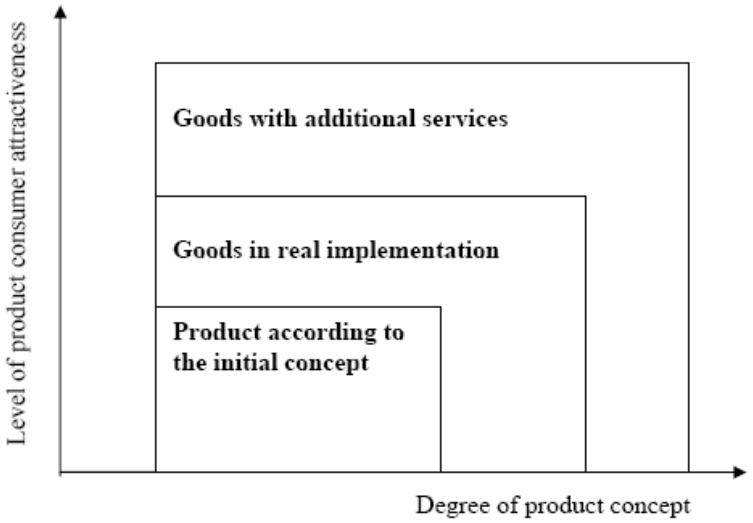
3) What is an idea?

a) The idea is a general concept of the product easily understandable for consumers
b) The idea is a general concept of the product that can be offered on the market
c) The idea is a new product that can be offered on the market
d) The idea is a general concept of innovation product

4) Please complete the scheme of new product concept representation levels



Correct answer:



5) Which element is not a part of marketing strategy:

a) Strategy of formation and development of target market
b) Product strategy
c) Coordination strategy
d) Pricing strategy
e) Products promotion strategy
f) Strategy of demand creation and stimulation

6) The goal of market testing is:

a) To stimulate the process of promotion goods to market in certain market areas
b) To simulate the process of introduction and promotion goods to market in certain market areas
c) To introduce and promote goods to market in certain market areas
d) To stimulate the process of introduction goods to market in certain market areas

7) Innovation cycle which ends with the sale of a license for the right to manufacture a new product is the end of what stage?

a) Generation of idea and concept of new product

b) Product market testing
c) Introduction to the market
d) Business analysis

8) Innovation cycle which ends with selling the patent on technical and (or) technological solutions is the end of what stage?

a) Generation of idea and concept of new product
b) Product market testing
c) Introduction to the market
d) Business analysis

9) What stage of innovation process has the biggest share of success?

a) Ideas generation and selection
b) Business analysis
c) Product development and manufacturing
d) Product testing
e) Commercial production

10) What stage of innovation process has the biggest share of failure?

a) Ideas generation and selection
b) Business analysis
c) Product development and manufacturing
d) Product testing
e) Commercial production

Answers.

1	2	3	4	5	6	7	8	9	10
	c	b		c	b	b	a	e	a

For Topic 1.3.:

1) Method for generating idea which includes identifing the best model on the market drawbacks and finding ways to improve it:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

2) Method for generation idea, which assume prohibition of ideas criticism:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

3) Method for generation idea, which use various types of analogies for the analysis and

solution of the given problem:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

4) Method for generation idea, which use the transformation rules that can be applied to poor decisions in the field of traditional search:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

5) Method for generation idea, which includes finding new relations between the parts of the previous improper decision:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

6) Method for generation idea, which includes project situation revaluation:

a) Methods of prototype improvement
b) Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

7) Method for generation idea, which includes using a chart of an alternative means of functions which an acceptable product should be able to perform:

a) Methods of prototype improvement
b)Brainstorming
c) Elimination of the dead-lock situations
d) Synectics
e) Morphological maps

8) How many people should participate in brainstorming:

a) 1-2
b) 100-200
c) 5-6
d) the more the better

9) When a developer is trying to imagine himself as a certain product or unit it is the following type of analogy:

a) direct

b) subjective
c) symbolic
d) fantastic

10) When the characteristics of certain object or phenomenon are equaled with the characteristics of the other one it is the following type of analogy:

a) direct
b) subjective
c) symbolic
d) fantastic

Answers.

1	2	3	4	5	6	7	8	9	10
a	b	d	c	c	c	e	c	b	c

For Topic 1.4.:

State, with reason in brief whether the following statements are True or False:

1. Flexible organizational culture negatively affects the development of innovative environment at a company (**False**)
2. Competitors could be the sources of new ideas (**True**)
3. Organizational structures set up on bureaucracy principles foster the development of innovative environment (**False**)
4. A business-process company is based on the principle of strict hierarchy (**False**)
5. Innovative companies do not employ the principle of employees' substitution (**False**)
6. Demographic changes could be the source of innovative ideas (**True**)
7. Creative people are distinguished by their repetitive patterns of thinking (**False**)
8. A company's organizational culture has no influence on the development of innovative environment at the working place and among the employees (**False**)
9. Creative or innovative companies encourage criticism of a mistake committed by an employee (**False**)
10. The collaborative innovation type of work involves contribution of each participant in the cooperation process (**True**)
11. An effective leader helps the team members to fulfil their potential by the right motivation to achieve goals, using financial and other motivation tools (**True**)
12. The reasons for limiting innovative initiatives include psychological and emotional factors, such as fear of being wrong, misunderstood, criticized, regarded as incompetent (**True**)

For Topic 2.1.:

1) What is the most effective way to use Industrial Property Objects (IPO)?

a) Sale of all exclusive rights on IPO by the owner
b) Sale of license
c) Use of IPO in the own production
d) Sale of know-how

2) What does it mean "Licensing"?

a) Sale of all exclusive rights on idea without any time limit

b) Licensing is granting the permission by the patent owner to other physical or corporate body to commit one or more actions in a certain country during the limited period of time
c) Sale of all exclusive rights on IPO to commit actions in any country
d) Trade system for technology transfer

3) What does it mean "Royalty"?

a) The royalty is a cost of invention.
b) The royalty is a license remuneration in the form of periodic assignments.
c) The royalty is a payment license remuneration of firmly fixed sum at once or by 2-3 portions.
d) The royalty is a partial payment of expected profit.

4) What does it mean "Marketing organization"?

a) The organization which is engaged in market segmentation, competitiveness standards development, marketing concept implementation in innovative enterprise units, innovative enterprise strategy development, advertizing and stimulation of sales of goods acceleration
b) Organizations which are engaged in scientific and experimental assessment of competitiveness of goods standards materialization possibility, development of innovations, their testing and diffusion
c) The organization which is engaged in development of new products manufacturing, mass production, tactical marketing and sales of manufactured products
d) Innovative organizations incorporated with large scientific centers

5) What does it mean "Scientific Parks"?

a) Compactly located complex functioning of which is based on commercialization of scientific and technical activity and acceleration of innovations advancement to goods production
b) Voluntary association of the independent industrial enterprises, scientific, design, design and other organizations for the purpose of increase of efficiency of any kind of activity on the basis of collective business.
c) Innovative organizations incorporated with large scientific centers (universities, institutes)
d) Temporary association of major companies within the intercompany cooperation assuming joint financing, carrying out strategic research and development, development of technologies and standards during the certain period of time

6) What does it mean "Invention"?

a) The invention is the technical solution which is new, having legal protection, inventive level and is industrial application
b) Invention is a new solution or design with commercial value
c) Invention is a solution with Patent protection
d) Invention is any improvement in product quality

7) What does it mean "Innovations"?

a) Innovations are any new solutions protected by Patent
b) Innovations are new solutions or design to increase value added of product
c) Innovations are solutions or services to improve product realization
d) Innovations are new or advanced technologies, types of production or services, and also the organizational technical solutions of production, administrative, commercial or other character promoting movement of technologies, products and services on the market.

8) What does it mean "Life cycle of production"?

a) Life cycle of production is the set of the interconnected processes describing consecutive change of a production condition from initial requirements to utilization.
b) Life cycle of production is service time of product from manufacturing to utilization
c) Life cycle of production is time duration within the production processing
d) Life cycle of production is the time from market entering to withdrawal from sale.

9) What does it mean "Intellectual property"?

a) Intellectual property is a feature of author to be the owner of created product
b) Intellectual property is the author right to sell his creation
c) Intellectual property is the set of exclusive rights on results of creative activity, production, performed works and services.
d) Intellectual property covers writing books, music, art objects

10) What are main features of clusters?

a) Clusters characterized by such key elements as geographical concentration; specialization; competition and cooperation; critical weight; cluster life cycle; innovation.
b) Clusters are specially created complexes in one region, near the center of scientific ideas, including firms and the establishments covering a full innovative cycle
c) Clusters are temporary associations of major companies within the intercompany cooperation, assuming joint financing, carrying out strategic research and development, development of technologies and standards during the certain period of time
d) Cluster is voluntary association of the independent industrial enterprises, scientific, design, design and other organizations for the purpose of increase of efficiency of any kind of activity on the basis of collective business

Answers.

1	2	3	4	5	6	7	8	9	10
c	b	b	a	c	a	d	a	c	a

For Topic 2.2.:

1) Type of the entrepreneurs organization involved in innovative activities, research and development expect:

a) all organizations and businesses whose main activity involves production of goods or services for sale, including state-owned and venture entrepreneurs;
b) organizations providing management for the State and meeting society demand at large;
c) non-profit organizations which do not make a profit but mainly involved in the research activities related to public and administrative functions;
d) research institutes, innovation centers which are under direct control or management, or associated with universities.

2) Among the organizational structures of innovation management special role belongs to small firms because:

a) they can be implemented to any profitable project;
b) there will always be competitors offering better quality products at lower prices;
c) small groups are more mobile, better perceived and generate new ideas;

d) the model is the production of basic consumer properties using copied ideas.

3) Business Angels are:

a) private investors putting money into innovative projects (StartUp) in exchange for a return of investment and share in the capital;
b) business angels invest some of their own funds in the most innovative companies on the final stages of development;
c) involved in the research activities related to public and administrative functions;
d) including state-owned and venture entrepreneurs into innovative projects.

4) Michael Porter's different variants of common strategies reduced the basic types of strategies:

a) stability, growth, reduction, hybrid strategy;
b) stability, growth;
c) stability, reduction, separation, reversal;
d) stability, growth, reduction

5) Innovation imitation strategies

a) are used by organizations or those having strong market position and technology
b) the essence of their model is the production of basic consumer properties using copied;
c) are used by organizations which are not pioneers in the market of various innovations;
d) are aimed at keeping the organization's competitive position on existing markets.

6) Which statement is true for the "Low cost Leader"?

a) in any market gains competitive advantage from being able to produce at the lowest cost;
b) effective sales and marketing so that the market understands the benefits offered by the differentiated offerings;
c) enables the company to charge premium prices;
d) focuses its effort and resources on a narrow, defined segment of a market.

7) To create a successful differentiation strategy, organizations need:

a) increasing profits by reducing costs while charging industry-average prices;
b) the ability to deliver low-quality products or services;
c) increasing market share through charging lower prices while still making a reasonable profit on each sale because you've reduced costs;
d) effective sales and marketing so that the market understands the benefits offered by the differentiated offerings.

8) The strategies they realize are oriented on risky innovations based on applying the newest highly-efficient technologies leading to maximum profit and venture investments:

a) Violent;
b) Patient;
c) Explerent;
d) Commutants.

9) "Commutants":

a) are placed into niche specialism and production of small batch of elite goods and overcharge purchasers;
b) actively contribute to the promotion of new products and technologies on a massive scale creating new services on their basis;
c) engaged in large-scale and mass production of products for a wide range of consumers;
d) operate on the stages of growth of output and simultaneously on stage of decreasing inventive activity.

10) Technology parks, innovation and business incubators:

a) businesses whose main activity involves production of goods or services for sale;
b) small business focused in financing of innovative projects;
c) objects of structures that support and stimulate the development of small innovative enterprises;
d) organizations which involved in the research activities related to public and administrative functions.

Answers.

1	2	3	4	5	6	7	8	9	10
a	c	a	d	b	a	d	c	b	c

For Topic 2.3.:

1) What can be related to the principles of national innovation policy?

a) new knowledge, changes in perception, creative thinking, the development of the market;
b) the use of traditional strategies, the old methods of management;
c) financial support , the implementation of a favorable credit, tax and customs policy in the field of innovation;
d) implementation of planning guidelines.

2) What is done by government for regulation of innovation?

a) the formation and implementation of national, sectoral, regional and local innovation programs, financial support for the implementation of innovative projects;
b) for the life cycle of innovation from idea formation to its development and distribution;
c) the financing and investment development, distribution of new types of products or services;
d) the process of creating new products (services).

3) What does not apply to the basic forms of state support of innovation?

a) tax benefits;
b) direct government funding;
c) create a network of technology parks;
d) public procurement of innovative products.

4) Who determines the main directions of development in the innovation policy of "technology push"?

a) market;

b) entities;
c) the State;
d) local authorities.

5) Which of the following options for innovation policy has never been main ones for the State?

a) technological shock;
b) social orientation;
c) market orientation;
d) structural changes.

6) In what kinds of innovation policy the role of government is the least?

a) technological shock;
b) social orientation;
c) market orientation;
d) structural changes.

7) By whom fundamental research is usually organized and funded?

a) state;
b) regional authorities;
c) enterprises;
d) individuals.

8) How does government regulate innovation process at the stage of marketing?

a) fully organized and funded by the state;
b) possible incentives through tax breaks;
c) through public procurement of innovative products;
d) State gives access to the appropriate reference and statistical information.

9) How the state regulation of innovation processes at the regional level is taking place?

a) public procurement of innovative products through a system of public procurement;
b) the equal and clear access to the competition;
c) tax credits, direct financial assistance;
d) organization of access to fair, presentations, PR-projects.

10) Are there any formal criteria for effective scientific, technological and innovation development?

a) yes;
b) yes, but they require the expenditure of significant financial resources;
c) no, international experience indicates the absence of such criteria.

Answers.

1	2	3	4	5	6	7	8	9	10

c	**a**	**d**	**c**	**b**	**c**	**a**	**d**	**c**	**c**

For Topic 2.4.:

1) Economic efficiency indicators of innovation projects include?

a) the net present value;
b) cost;
c) targets;
d) financial performance.

2) Give the true definition of discount rate process for measuring innovation

a) the present value of all cash flows for the period of implementation of innovation, which is reduced by the present value of all cash outflows during this period;
b) the number of years needed to equalize the amount of growth of income spent on capital investment;
c) the reduction in process time cash flows of future costs and revenues that arise from the introduction of innovations;
d) the marginal efficiency of capital.

3) What can be attributed to the innovation projects selection criteria?

a) financial criteria;
b) calculation;
c) financial arrangements;
d) administrative orders.

4) What are the types of innovation project effectiveness indicators?

a) commercial (financial) performance;
b) fiscal efficiency;
c) national economic cost-effectiveness;
d) all answers are correct.

5) Define the commercial viability of innovative project

a) the impact of the results of the innovative project income and expenditure budget's implementation;
b) the ratio of financial costs and results of the initiatives that ensure the required rate of return;
c) the effectiveness of an innovative project with the perspective of economic policy;
d) direct income.

6) Define innovation project budget efficiency

a) budget effect as the excess of revenues over its expenses;
b) the ratio of financial costs and results of the initiatives that ensure the required rate of return;
c) the effectiveness of an innovative project with the perspective of economic policy;
d) direct income.

7) Define the national economic cost-effectiveness of innovation project

a) the ratio of financial costs and results of the initiatives that ensure the required rate of return;
b) the impact of the results of the implementation of the innovative project income and expenditure budget;
c) the effectiveness of an innovative project in terms of the entire national economy, its regions, industries, organizations;
d) direct income.

8) Define the concept of "risk" in the frames of innovation project implementation

a) incomplete and vague information on the terms of innovative projects;
b) the probability of commercial success;
c) uncertainty about the likelihood and consequences of adverse situations during the project;
d) the expected costs.

9) In which case, when analysing the project using index of return on assets, it should be taken for implementation?

a) If the value is less than 1, in this case the project costs less than its income;
b) If the value is 1, in this case, the optimal ratio of cost to income ratio and the highest probability of success of the project;
c) If the value is less than 0, in which case the cost of the project will be reduced to almost zero;
d) If the value is greater than 1, in this case, the increase in assets for the results of the project.

10) It is advisable to use ARR (investment efficiency ratio) method for projects that expected to be implemented during:

a) two to three months;
b) one year;
c) a period of not more than 5 years;
d) more than 7 years.

Answers.

1	2	3	4	5	6	7	8	9	10
a	c	a	d	b	a	c	c	d	b

For Topic 2.5.:

1) The most difficult step of the financing small and medium innovative enterprises is:

a) start-up financing
b) development financing
c) seed financing
d) buyout

2) The goal of the venture investor is to……., to …….. and after a specified period to …… and increase manyfold his initial investments (determine the correct sequence):

a) sell the share in the company
b) maximize the value of the company
c) reinvest all profits earned by the company

3) The wealthy people who invest their own money into private companies with significant growth potential at the initial stages of their development, usually without providing of any pledge are:

a) business investors
b) business angels
c) business daemons
d) business boys

4) How business angels reduce their risks?

a) take the pledge
b) make several investments into the different projects
c) increase the rate of interest

5) Business angels bring to the companies other invaluable contributions including:

a) finances
b) experience
c) knowledge
d) operations and management skills

6) Determine the correct sequence of the process of interaction between venture capitalist and enterprise (between several stages):

a) due diligence
b) preliminary assessment of the project
c) the full version of the business plan by the investor if interest to the project appears

7) The difference between the present value of cash inflows and the present value of cash outflows is:

a) net present value
b) internal rate of return
c) financial luck index
d) payback period

8) The difference between the present value of cash inflows and the present value of cash outflows is:

a) profitability index
b) payback period
c) internal rate of return
d) net present value

9) The maximum level of prices of capital at which the project with the specified flow of funds to the investor will have a commercial interest for him is:

a) profitability index
b) payback period
c) internal rate of return
d) net present value

10) The higher a project's internal rate of return, the ……it is to undertake the project.

a) more preferably
b) less preferably

Answers.

1	2	3	4	5	6	7	8	9	10
c	c,b,a	b	b	b,c,d	b,a,c	d	c	a	b