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INDEX: Industrial Expert

E-TRIM – Intermediate Module

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About the course

The "Entrepreneurship, Technology and Restructuring Management" (E-TRIM) course covers information about entrepreneurship and company organisation, commercialization of innovative projects, innovation marketing, project and risk management and finally policy, legal aspects and funding. It also gives insight into best practices of innovative companies' operation.

Format

The form of education is e-learning with approx. 20 hours of lessons and 20 hours of self-studying. Weekly lessons include lectures, thematic videos and performing test tasks. An important part of this course is performing final exam in the form of multiple choices quiz, which contains answers based on study material. The course is set up in compliance with the ECVET System with possibility to obtain the Certificate of attendance.

Who can take this course

This course does not require any specific knowledge on Industry 4.0 and is designed for an audience, who want to learn about 4th Industrial revolution and smart technologies. This means, first of all, students (bachelors, masters, specialists), whose curricula include disciplines related to the industry 4.0 and smart technologies. The course will be of particular interest to:

- senior executives or a development department managers of your enterprise interested in learning about innovation and technology transfer
- professionals interested in commercialisation of Industry 4.0-based solutions in his area of expertise
- founders of high-technology start-ups
- young engineers of the company who is already working on development of specific components of Industry 4.0 and their application or is interested in expanding the base of customers that develop smart technologies for new fields of application
- educators teaching graduate and postgraduate courses focusing on commercialisation and technology transfer
- students or postgraduates interested in commercialisation and technology transfer

Programme of the course

- 1 Entrepreneurship and company organisation
 - 1.1 Introduction
 - 1.2 Entrepreneurship and entrepreneurial behaviour – market opportunity identification and evaluation
 - 1.3 Stages of innovative company foundation
 - 1.4 Legal regulation of foundation and operation of innovative companies in all-European context
 - 1.5 Benchmarking assessment of different types of innovative company registration

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- 1.6 Recommendations on the company's location (business incubators, science parks, technological clusters, etc.)
- 1.7 Search of project partners and interaction between them
- 1.8 Main business processes in innovative company management: characteristics of organizational structure, goals, functions and tasks of management subdivisions
- 1.9 HR policy in innovative companies, personnel management
- 2. Commercialization of innovative projects
 - 2.1 Introduction
 - 2.1 Analysis and project novelty evaluation
 - 2.3 Methods and tools for business model development
 - 2.4 Business plan development for project implementation
- 3. Innovation marketing
 - 3.1 Introduction
 - 3.2 Marketing process and market analysis for innovative products
 - 3.3 Development of a new product
 - 3.4 Entering international markets
- 4 Project and risk management
 - 4.1 Introduction
 - 4.2 Project management: concepts, models, procedures, standards, selected tools
 - 4.3 Methods and models of risk evaluation and risk reduction in innovative projects
- 5 Policy, legal aspects and funding
 - 5.1 Introduction
 - 5.2 Patenting R and D results
 - 5.3 Procedures for execution of a patent
 - 5.4 Funding sources for innovative projects
 - 5.5 Forms and methods of investment raising for innovative projects
 - 5.6 Principles and methods of interaction with investors
 - 5.7 Risks of venture capital funding, methods and selected tools for risk reduction
- 6 Best practices of innovative companies' operation
 - 6.1 Introduction
 - 6.2 Best practices
 - 6.3 Case studies

Course staff

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Results

As the result of completing the E-TRIM intermediate level course, learners will know:

- ✓ what is market opportunity
- ✓ stages of innovative company foundation
- ✓ legal regulation of foundation and operation of innovative companies
- ✓ benchmarking assessment criteria of different types of innovative company registration
- ✓ criteria for the company's location
- ✓ search of project partners methods
- ✓ main business processes in innovative company management
- ✓ HR policy in innovative companies
- ✓ methods and techniques to analyse and evaluate project novelty
- ✓ methods and tools for business model development
- ✓ methods of business plan development for project implementation

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- ✓ the principles of marketing process and market analysis for innovative products
- ✓ requirements for development of a new product
- ✓ forms and methods of entering international markets
- ✓ concepts, models, procedures, standards, selected tools of project management
- ✓ methods and models of risk evaluation and risk reduction in innovative projects
- ✓ methods of patenting R and D results
- ✓ procedures for execution of a patent
- ✓ funding sources for innovative projects
- ✓ forms and methods of investment raising for innovative projects
- ✓ principles and methods of interaction with investors
- ✓ risks of venture capital funding, methods and selected tools for risk reduction
- ✓ best practices and case studies of successful innovative companies' operation

Competences

By completing the E-TRIM intermediate level course, learners will be able to:

- ✓ identify and evaluate the market opportunity
- ✓ identify stages of innovative company foundation
- ✓ benchmark different types of innovative company registration
- ✓ choose relevant criteria for the company's location
- ✓ search project partners
- ✓ analyse and evaluate project novelty
- ✓ develop a business model
- ✓ develop elements of business plan for project implementation
- ✓ conduct a simple market analysis for innovative product
- ✓ select a simple strategy for new product development
- ✓ select methods entering international markets
- ✓ use models, procedures, standards, selected tools of project management
- ✓ apply selected techniques to evaluate risk of innovative projects
- ✓ identify suitable patenting strategies
- ✓ identify funding sources for innovative projects
- ✓ interact with investors



E-TRIM - Intermediate Module

Entrepreneurship and company organisation

Introduction

This part of the course provides information about entrepreneurship and company organisation with special regard to start-up foundation and early stages of functioning.

Some people behave in an entrepreneurial way and it results in an organisation foundation. Those people can exploit specific circumstances emerging in their environment which combined with unique personal assets and skills can lead to a successful business entity. Such a fortunate outcome has to be accompanied by many important decisions depending on the stage of the company development and refer to areas such as:

1. Choice of a legal form of a company.
2. Location.
3. Partners.
4. Organisational structure.
5. Employees etc.

All above-mentioned issues determine the company's growth.

Entrepreneurship and entrepreneurial behaviour – market opportunity identification and evaluation

Entrepreneurship and entrepreneurial behaviour

The root of the word 'entrepreneurship' is *entreprendre* meaning 'go ahead, take in hand, undertake, take a hold of'. Entrepreneurship is an organisational phenomenon – it is a social process of organizing with organisation formation as a core. Hence, entrepreneurship is a process involving certain individuals behaving in an entrepreneurial way which is aimed at organisation formation.

The organisation formation requires entrepreneurial behaviour. This means that despite being created in a specific environment, organisations do not rise on their own. There is a need for individuals who are driven by a certain motivation and possess specific skills enabling them to create and run a company. The behaviours of individuals produce organisations. But statistically, the formation of an organisation is very much a team-like process – an important part of company formation activities is based on teams of individuals. What is more, the formation of an organisation does not happen instantly. It is a process and so is entrepreneurial behaviour. Entrepreneurial activities cover a series of actions extended in time. Those actions are intended to result in the creation of an organisation which is perceived as a principal outcome of entrepreneurial behaviour. This primary outcome is

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accompanied by other phenomena (e.g., product development, market analysis, identification of target customers, knowledge accumulation). The process of entrepreneurial behaviour is complex and consists of interrelated factors. Entrepreneurial activity does not always result in a successful organisation. Entrepreneurial behaviour involves testing the ideas of individuals about whether a set of concepts, skills and actions may result in fortunate outcomes, however sometimes the outcome is failure.

Entrepreneurial opportunity

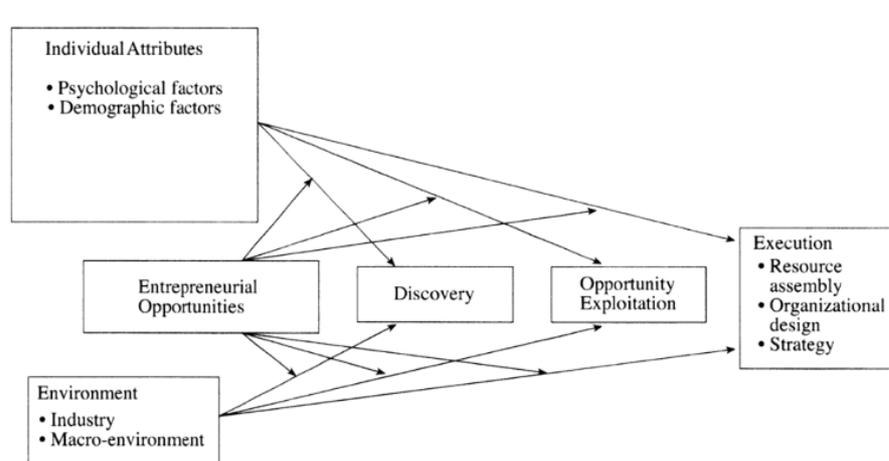
A principal and critical aspect of the entrepreneurship phenomenon is a market opportunity. Opportunity can be perceived as a concrete reality waiting to be noticed, discovered by the entrepreneurs. But one can also understand that an opportunity appears through the way that an entrepreneur gives it a meaning. In other words, an opportunity is revealed through unique entrepreneurial activities.

Opportunity is seen as positive, controllable and involving potential gain. Nevertheless, many entrepreneurs perceive opportunities as dependent on their abilities and efforts. This suggests that certain activities undertaken by individuals condition opportunities. Opportunities then can be seen as discovered but also created by entrepreneurs. In fact, many of us can define the opportunity in various ways.

Entrepreneurial process – opportunity identification and evaluation

Entrepreneurship involves the reaction of an entrepreneur to the existence of profit opportunities. Entrepreneurial opportunity identification, therefore, begins an entrepreneurial process. Opportunity identification and exploitation is accompanied by various factors which influence its direction, nature and effectiveness.

A model of the entrepreneurial process



Source: Shane S. A. (2003), A General Theory of Entrepreneurship: The Individual-Opportunity Nexus, Edward Elgar Publishing, Cheltenham, p. 11.

The exploitation of entrepreneurial opportunity depends both on the environment and the entrepreneur. The final effect is obtained along with resource assembly, organisational design and strategy implementation.

When understanding an opportunity as an existing reality which may have value in the future, it is important for an entrepreneur to decide whether he or she should or should not dedicate himself/herself and his/her assets to a given opportunity. Literature gives some instruments and techniques which enable businessmen in such situations.

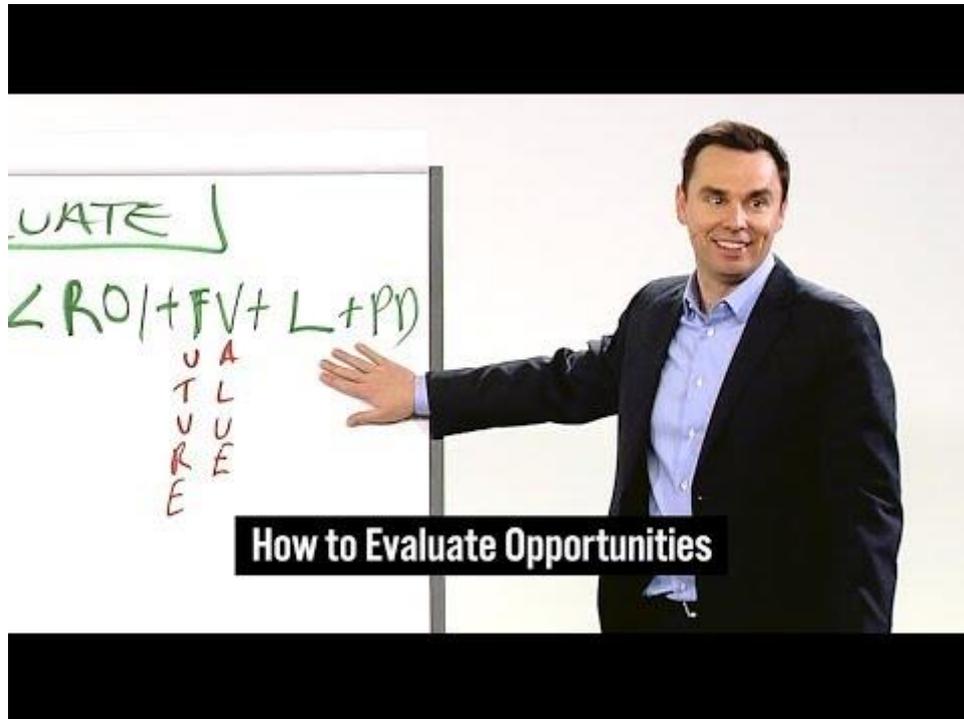
Entrepreneurial opportunities and the entrepreneurship nexus



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How to Evaluate Opportunities

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How To Evaluate Business Opportunity and Idea



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How to Identify a Business Opportunity?

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Stages of innovative company foundation

Every company experiences changes, difficulties and challenges while developing. The events accompanied by certain determinants and factors can be organised into a framework as it turns out that companies are facing similar problems in subsequent stages of their growth. Such a framework can be very helpful:

- It helps entrepreneurs understand their situation and the possible challenges they can face.
- It enables them to anticipate upcoming requirements related to the fact that a company is growing.
- It helps to evaluate the external factors affecting operating the business due to its ongoing growth (e.g. tax regulations).

Hence, in terms of an innovative start-up foundation, it is clear that such a framework has to also take into consideration early stages in a company's origin and therefore such an approach would include 4 main stages:

- **Seed** (the stage of the venture concept, seed-up, seed corn). This stage begins when a business is just a thought, an idea. This is the most difficult and risky stage. At the seed stage, the concept of *The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.*



the enterprise is specified. The company has to evaluate market potential, competition and legal conditions. Activities may also include the final stages of research activities, technology tests of product or activities related to certification and admission to trading. The outcomes of this phase should include market research, business plan, product prototype, and a complete management team of the future company. The following risks are at a high level: technical risk related to the new or modernized technology is high, the market risk related to the lack of market experience of the new product and the risk related to management (management team which is still not experienced). At this stage, the capital demand from the external investor's point of view is relatively small and comes mainly from owners, friends and family.

- The **start-up stage** covers the financing of activities related to the company's presence on the market. The company's operational activity is initiated, legalized and a trial number of products is launched on the market. The offer is confronted with customers' requirements. Its positive reception conditions further operations and serial production. At this stage, a company has to finance: the creation of the company's production base, its organisational structure (including employee recruitment) and the first marketing activities. The main source of risk is the area of market acceptance of the offered product or service.
- The **early development stage** (early growth, initial growth, development stage, roll-out) includes activities related to building a strong market position of the company. For the new company, this stage is a period of intense market activities, expansion of production capacity, further recruitment of employees, building and expansion of the sales network.
- The **expansion stage** is oriented to activities aimed at expanding the scope of functioning by introducing new products, entering into new markets and introducing new technologies. This stage applies to companies that have already achieved a relatively stable market and financial position (operational break-even point) but are determined to find new revenues and profit channels. It requires planning and research, but also promotion, brand building, creation of distribution channels.

We can distinguish at least 8 factors which determine success or failure of an evolving company. Four of them relate to the company:

1. Financial resources.
2. Personnel resources.
3. Systems resources, e.g. planning, control etc.
4. Business resources (customer relations, market share, supplier relations, manufacturing and distribution processes, technology and reputation).

The other four factors which are related to the owner are as follows:

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1. Owner's personal and business goals.
2. Owner's operational abilities.
3. Owner's managerial ability and willingness to delegate responsibility.
4. Owner's strategic abilities for looking beyond the present.

There are also other approaches to defining the stages of a company's evolution. For example:

Multiple Choice with Hints and Feedback

The stage of company foundation in which market research, business plan, product or service prototyping is being developed is called:

- The start-up stage.
- Seed.
- The early development stage.
- The expansion stage.

There are also other approaches to defining the stages of a company's evolution. For example:

[The 7 Stages of Starting and Running a Business](#)

The five stages of a company's lifecycle



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Multiple Choice with Hints and Feedback

The stage of company foundation in which market research, business plan, product or service prototyping is being developed is called:

- The start-up stage
- Seed
- The early development stage
- The expansion stage

Legal regulation of foundation and operation of innovative companies in all-European context

When deciding to run a business, an entrepreneur must decide upon the legal form of organisation. This differs depending on the country in which the company is going to be run and can include sole proprietorships or sole traders, various types of companies and partnerships as well as corporations and other permitted types of entities.

Chosen legal form determines:

- The registration procedure,

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- The size of the capital needed for start,
- The list of documents needed to register a company,
- The structure of management,
- The rights and responsibilities of business owners (if there are more than one).

A sole proprietorship (or the sole trader, also individual entrepreneurship or proprietorship) stands for the type of enterprise which is owned and run by one person. The law does not distinguish between the owner and the proprietorship entity. Partnership is an enterprise based on a voluntary association of two or more persons to run a business for profit as co-owners. From the legal point of view, there are various types of partnerships depending on the country's jurisdiction. You can find a type of a company called company limited by shares, which means that the liability of the shareholders to creditors of the company is limited to the capital originally invested. A corporation is separate from the owners and comes in many different types depending on the national law.

To start a new company or expand a business in another country you need to know the rules that apply to set up a company in that specific country. According to European Union countries' law, it is necessary to have a residence permit to open up a business. Apart from choosing a proper legal form, to establish a business in a European country, you need to get a business tax identification number and register with the respective social security administration. In some countries, it is required to be registered members of a chamber of commerce or other governing business organisation.

Depending on the country, an entrepreneur or enterprise may have other responsibilities depending on the type of business, for example:

- Licenses, permits, concessions,
- Insurance,
- Related to personal data usage and storage,
- Paying taxes, including income tax, land tax or other,
- Related to hiring people to work,
- Bookkeeping etc.

Fortunately, in almost every country, there is a network of institutions that help entrepreneurs to deal with legal obligations. In the European Union, there are publicly governed national contact points in each country which facilitate the process.

To get acquainted with national support, please visit: [Points of Single Contact](#)

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As an EU citizen you are entitled to:

- Set up your own business (even as a sole trader) in any EU country, Iceland, Norway or Liechtenstein;
- Set up a subsidiary branch of an existing EU-based business that is already registered in one EU country.

In the European Union, European Companies (*Societates Europaeae*, sing. *Societas Europaea*, SE) can also operate, which can be established through:

- A merger of national companies from different member states,
- Creation of a holding between companies (or other entities) in different member states when at least 2 companies from different EU countries or when the participating companies have had a subsidiary or a branch in another EU country for at least 2 years,
- Creation of an SE subsidiary of a national company when at least 2 entities are from different EU countries or when the participating entities have had a subsidiary or a branch in another EU country for at least 2 years,
- Conversion of a national company into an SE; this refers to a company that has had a subsidiary in another EU country for at least 2 years.

To establish a European Company, you must abide by all the requirements listed below (it must be checked whether a given country has additional requirements):

- Company's registered office and your head office must be in the same EU country. This requirement may vary between countries.
- The company must have a presence in other EU countries (subsidiaries or branches), or all companies involved need to be governed by the laws of at least two different EU countries.
- The company must have a minimum subscribed capital of EUR 120 000. This requirement may vary between countries.
- The company and its employees' representatives decided on employee participation in the company bodies, and on how employees will be consulted and informed.

A European Company is suitable when already having a business and wants to expand to another European country. There are several advantages to setting up a European Company, as it simplifies the procedures when operating in more than one EU country.

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For more information, please check: [Setting up a European Company \(SE\)](#)

Multiple Choice with Hints and Feedback

A type of a company where the liability of the shareholders to creditors of the company is limited to the capital originally invested is called:

- A sole proprietorship.
- Company limited by shares.
- A start-up.
- SWOT.

Benchmarking assessment of different types of innovative company registration

Each business, depending on many factors, needs a particular registration type. Such a decision has to be made on the basis of the following circumstances:

- The legal liability,
- Tax implications,
- Administration,
- The level of flexibility,
- Future needs of the company.

To better understand when and why to choose a given type of company, please, refer to the following articles:

[What to Consider When Deciding Between Forming a Sole Proprietorship or LLC](#)

[Choose Your Business Structure](#)

[7 Mistakes To Avoid When Choosing Your Business Entity](#)

[Choosing the Best Business Entity for Your Startup](#)

Choosing the right registration type is not the only legal aspect of running a new business. It is also essential to consider:

- Intellectual property (IP) assignment agreement. This document regulates the transfer of an owner's rights, title and interest in certain intellectual property rights.
- Formulating strong bylaws to ensure operating with fewer complications thanks to established internal rules.

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- Signing founders agreement to avoid conflicts among partners.
- Having a non-disclosure agreement to protect data.
- Preparing clear and complex employment contracts to ensure employees understand their duties.
- When ready to take on private investment – shareholder agreement.

The above documents may not be sufficient for your company or may exceed the nature of your business. This is why it is recommended to ensure professional legal support.

Startup Legal Mechanics



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Multiple Choice with Hints and Feedback

A document which regulates the transfer of an owner's rights, title and interest in certain intellectual property rights is called:

- Founders' agreement
- IP assignment agreement

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- Franchising
- PESTLE.

Recommendations on the company's location (business incubators, science parks, technological clusters, etc.)

Location of a new business is important for many reasons:

- Access to funding facilities.

Funding options can vary depending on the location of a company. Some areas (e.g. rural) offer the possibility of gaining public support from the EU. Location in an incubator or a science park (apart from other benefits) allows profiting from extra capital, including venture capital.

- Tax and legal incentives.

Tax and legal obligations vary not only depending on a country but also the commune. Some estate taxes are in charge of local government. Countries have different regulations and obligations. Also, spatial planning regulations condition the possibility of running a given business.

- Office costs.

Office cost can be an important component of total costs and it's important to consider and compare various locations, including support institutions, thanks to which you can gain noticeable reduction of estate cost (business incubators).

- Human resource needs.

You certainly need employees with specific qualifications and therefore your location should take into consideration the local labour market.

- Research possibilities.

Depending on the need for particular research, you may take into consideration location in a science park or in proximity to external research facilities (R&D institutions).

- Networking.

Great ideas are the result of collaboration. This is why technology hubs, technology clusters are a serious proposition for start-ups. Nonetheless, you may need business partners for your company, apart from suppliers and customers.

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- Access to incubation programs.

Sadly, most start-ups fail within the first few years of operating. The main reason is ineffective management, not the offer. Establishing your business in a location which provides support can help to omit major and minor mistakes.

- Quality of life.

A place where you establish a business may either attract potential employees or restrain them from choosing this location as a place for living.

Do you need a startup incubator?



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5 Steps For Your Startup: Incubators & Accelerators - A Case Study for Entrepreneurs

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Startup Programs: Accelerators vs. Incubators

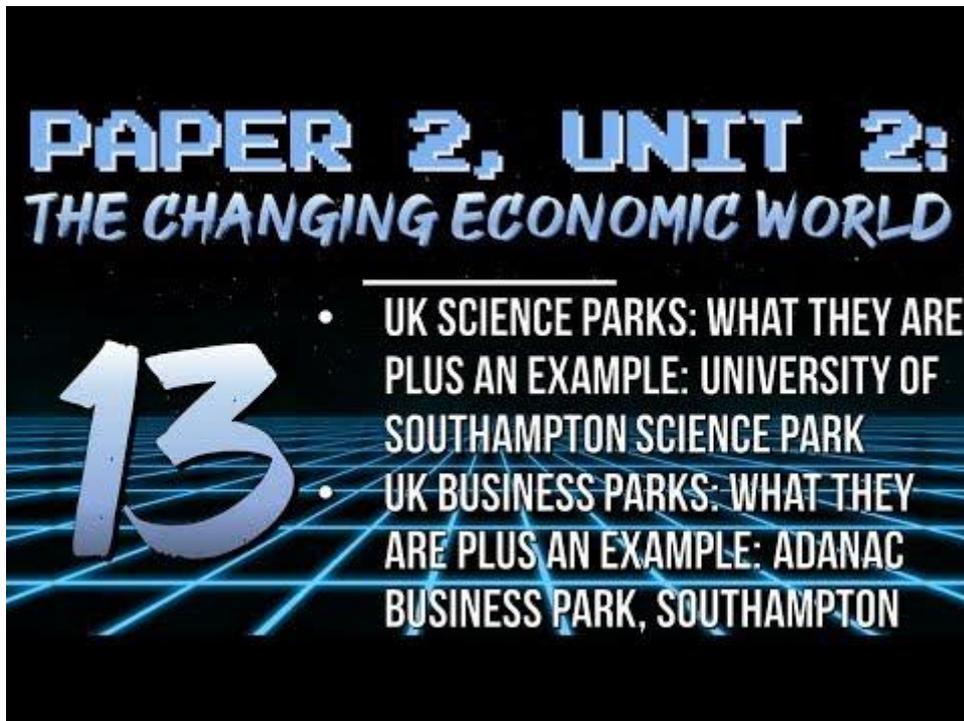
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Science parks and business parks

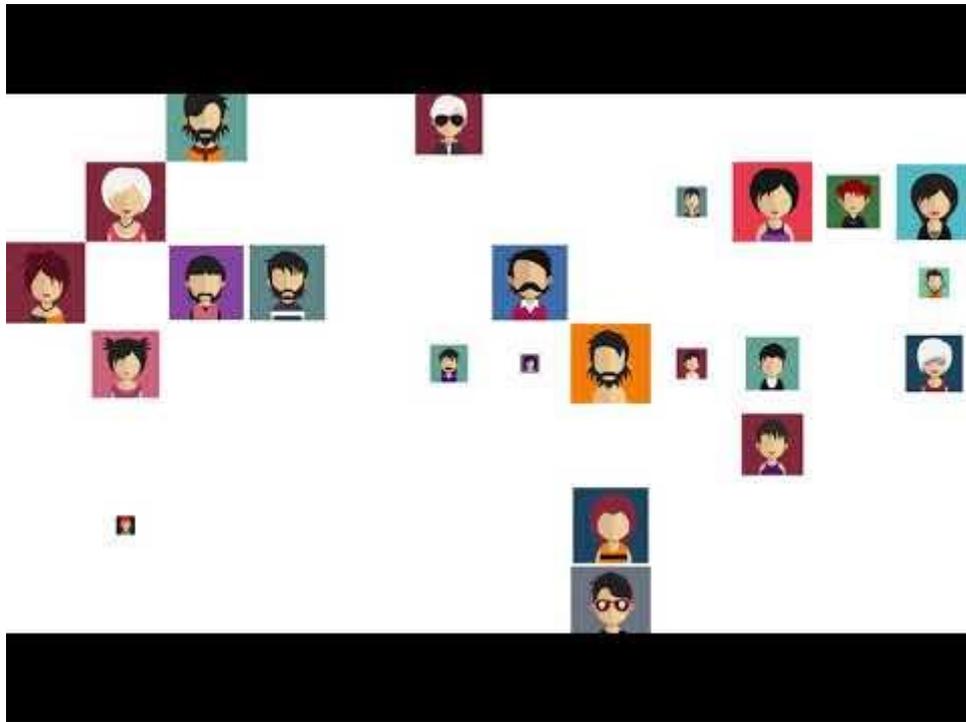
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Industry clusters

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Multiple Choice with Hints and Feedback

A support for young companies which is oriented to develop businesses by providing wide range of services and office space often along with venture capital financing is:

- Science park.
- Business incubation.
- Benchmarking.
- Venture capital.

Search of project partners and interaction between them

Each entrepreneur despite his or her self-reliance may need business partners:

- Wearing too many hats can negatively affect the efficiency of management.
- There can be a need for additional financial resources.
- A partner can be a source of additional skills and ideas.

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- A partner has his/her network of possible business connections which can be crucial for a company to grow etc.

Where to look for a business partner? You can consider the following propositions:

- Present or former co-workers. An advantage of this way of searching is the fact that such a person is someone you already know. You know whether this person is hardworking, reliable, honest.
- Friends. Many successful businessmen admit that friends are the best business partners. Nevertheless, there are important issues which should not be omitted (e.g. legal issues related to partnership agreement) in order not to lose a friend due to a business failure.
- In-person or online networking platforms. You may establish your business in a coworking space and find business partners there. Online networking groups can also be a source of effective partnership as well as professional associations.
- Family. A sibling or other family members can turn out to be stable partners, as the primary relationship is stable.
- Business courses, training. During such courses you can meet people directly involved in a given industry, already possessing some knowledge, maybe even passionate.
- Financial advisor or attorney relations. These are people you trust, and they have their network of relations which may result in finding a good partner.
- Professional business brokers. Such a path can be accompanied by professional legal agreements and therefore suitable in complicated arrangements.
- Your present or former clients or other business contacts. Ongoing or past relations have already been proven and you already know whether to rely on such a person or not.

If you are interested in personal stories and opinions on finding a business partner, please, refer to the following websites:

[How can I go about finding a business partner for my startup?](#)

[Find a partner abroad for your business](#)

2 Biggest Partnership Mistakes I Ever Made | Business Partnership Agreement Tips



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How to Choose the Right Business Partner



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Main business processes in innovative company management: characteristics of organisational structure, goals, functions and tasks of management subdivisions

It is not enough to define the goals of the organisation and plan tasks to be performed. It is necessary to "organise" to perform these tasks and achieve the set goals. Organizing can be described as "deciding on the best grouping of the organisation's activities and resources". It includes the following activities:

- Job design – defining the responsibilities of individuals in the work process, e.g. specialization of positions.
- Grouping of positions - e.g. by function (e.g. sales, supplies), by customer (e.g. institutional recipients, natural persons).
- Establishing hierarchical dependence, between positions - starting from establishing a chain of commands.
- Separation of decision-making powers between positions - by delegating powers to individual positions or departments and decentralization.
- Coordination of activities between positions - there are interdependencies between positions and departments.
- Differentiation of workplaces on: line positions and staff positions. Line position is a position in the direct command chain with authority and responsibility for achieving goals. Staff positions are those that provide advice, expertise and support for line positions.

In many sources, e.g. literature and the Internet, you can find various examples of the company organisation: simple, functional, matrix, divisional. Some of them refer to small organisations, others reflect more developed entities. For a new company, especially a technological one, it is important to take into account unique tasks related to innovation processes taking place in the company. To understand what key roles, you need in a start-up, please refer to the following video:

One of the interesting examples of organisational structure is presented on the following website:

[STARTUP ROLES & RESPONSIBILITIES: TECH STARTUP TEAM STRUCTURE](#)

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Building Your Startup Team - 6 Must Have Roles



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Steve Jobs - Organizational Structure

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HR policy in innovative companies, personnel management

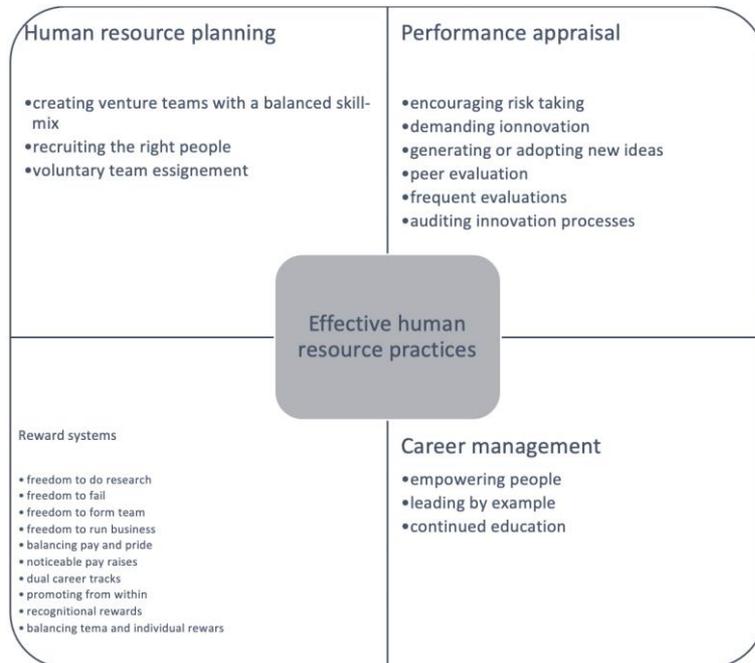
Human resources should never be ignored when launching an innovative company. People are its main asset and human resource management is different than in a usual company because of the different nature of tasks performed in an innovative business entity. You need people to manage each stage of the new product/service/process development.

Human resource management oriented to foster innovation and creativity can be conceptualized into the following dimensions:

- Human resource planning.
- Performance appraisal.
- Reward system.
- Career management.

Dimensions of human resource management to foster innovation and creativity

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Source: Gupta A. K., Singhal A. (1993) Managing Human Resources for Innovation and Creativity, Research-Technology Management, 36:3, 41-48

Human Resource Issues in a Startup



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How to hire the best: "4 key qualities to look for"



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How to Recruit and Retain Innovative Employees

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The role of a leader in an innovative company

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Commercialization of innovative projects

Introduction

This part of the course provides information about the commercialization of innovative projects issues. It is related to the implementation of innovative solutions in the market. Therefore, the scope of the module goes beyond the technical features of innovation - it is related to the overall planning of the business that is based on it, including business processes related to market, production or financial activities.

Thus, the module consists of three parts that introduce students to the detailed issues of planning:

1. The module "Analysis and project novelty evaluation" relates to the issues of product novelty evaluation in the context of solutions already available on the market.
2. Assessment of the novelty of the product is the basis for making strategic decisions as to the way the project is organised. As a result, for the development of a business model within which the resources and process of the new project will be organised - this is what the module "Methods and tools for business model development" concerns.
3. Strategic solutions designed in the form of a business model require detailed description, analysis and planning. These activities were presented within the module "Business plan development for project implementation". Preparing a business plan requires considerable effort and knowledge of detailed solutions to be implemented in a new business venture.

Analysis and project novelty evaluation

One of the key elements of planning innovative projects is determining the level of its novelty. This mainly concerns the level of novelty of products or processes introduced to the market. The degree of novelty is to be seen as a key factor which is of great relevance both in the determination of success factors in the development of innovative projects at strategic as well as operational level.

The degree of novelty is seen as the difference from the previous state. It should be measured and evaluated. The assessment of innovations in novelty can be carried in the run-up to an innovation project. Once a new product, a service or a new process has been introduced, the degree of innovation can be assessed in the future.

The degree of innovation influences the complexity of an innovation project. That's why a distinction should be made between innovation types and degrees of innovation in the early phase of innovation management, i.e. in the stage of ideas, to be able to pursue ideas appropriately. For example, product innovation belongs to classical product management, which is integrated into the ongoing R&D activities. For ideas with a higher degree of innovation or innovative business models, it is often necessary to form their own detached teams and separate the innovation project from the day-to-day business.

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A widely used measure of novelty that is recommended by OECD includes whether an innovation is (1) new to the firm only, (2) new to the firm's market or industry, or (3) new to the world. It is characterized by considerable simplicity and thus ease of use (hence its use in public statistics) but has many limitations, e.g. firms can serve a single market (if it only offers one type of product) or several markets (if it offers different types of products) or a market can be geographically restricted (if a firm only serves customers in specific regions), or it can be global.

Another classification is the distinction (described in the basic course) of innovation into:

- Breakthrough innovations (radical);
- Substantial innovations (semi-radical);
- Incremental innovations (small improvements).

In the practice of innovative projects, the precision of the novelty analysis is recommended. This can be provided by a method that employs FBS (Function - Behaviour - Structure). In the FBS model:

- The function is what a system does, and it is intentional.
- Behaviour is how a system accomplishes the function, and
- The structure represents the elements and interfaces constructing the system and its interacting environment.

Sarkar and Chakrabarti's (2011) FBS method of assessing product novelty is shown in Figure 1. The process of assessment starts with:

- A recently generated product is assigned 'very high' novelty if it fulfils a new function, which is not fulfilled by any of the existing products. Example: the mobile phone, when it was introduced for the first time, is an example of a very high novelty product.
- A recent product is 'not novel' if its structure matches with that of any other available products. A recent product is 'novel' if its structure is different from that of other products.

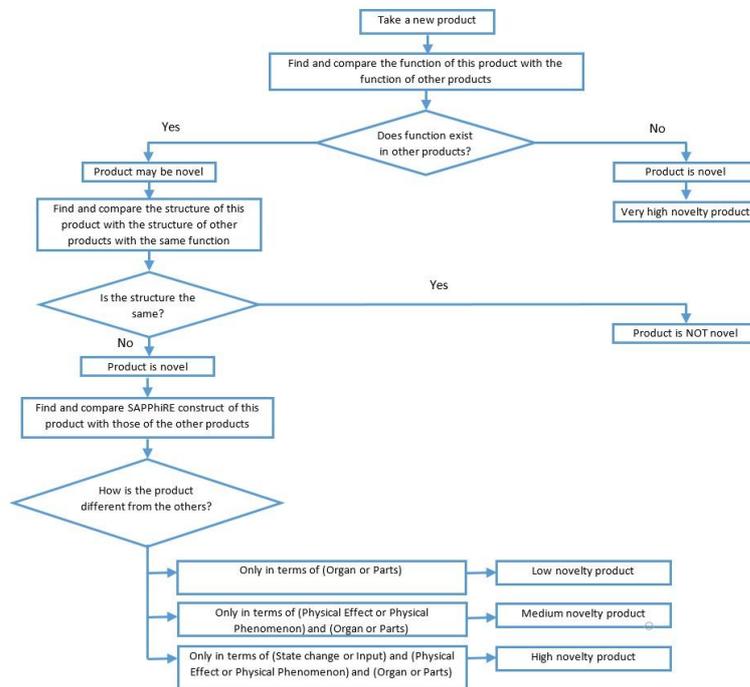


Figure 1: Steps in the novelty assessment method by Sarkar and Chakrabarti (2011), source: Sarkar and Chakrabarti (2011)

Within the next steps, the SAPPiRE (State-Action-Part-Phenomenon-Input-oRgan-Effect) model of causality is used to assess the relative degree of novelty of a product. It helps to explain the relationships between the following seven constructs:

- Parts – ‘a set of physical components and interfaces constituting the system and its environment of interaction’.
- State change- ‘the attributes and values of attributes that define the properties of a given system at a given instant of time during its operation’.
- organ – ‘the structural context necessary for a physical effect to be activated’.
- Effect – ‘the laws of nature governing change’.
- Input – ‘the energy, information or material requirements for a physical effect to be activated; interpretation of energy / material parameters of a change of state in the context of an organ’.
- Phenomenon – ‘a set of potential changes associated with a given physical effect for a given organ and inputs’.
- Action – ‘an abstract description or high-level interpretation of a change of state, a changed state, or creation of an input’.

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After the whole process products are assigned degrees of novelty as follows (Figure 1):

- 'Very high' novelty - a new product with a difference at the level of function (action).
- 'High' novelty – if a new product fulfils the function (action) already satisfied by some other products, and differs from other products in terms of all the other six constructs (except 'action').
- 'Medium' novelty if a new product differs from existing products only in terms of 'physical effects' or 'physical phenomena' plus 'organs' or 'parts'.
- 'Low' novelty product if it differs from existing products only in terms of 'organs' or 'parts'.

Exercise - Multiple Choice

FBS model has been implemented in novelty analysis. FBS means:

- Function-Behaviour-Structure.
- Formal Behaviour System.
- Federal Bank System.
- First Behaviour Stage.

Business model development - Business Model Canvas tool

Creating a business model is part of the process of the strategic business analysis and strategic management of the company. Using a business model describes how a given organisation creates, delivers, and acquires value in an economic, social, cultural, or another context.

Knowing and understanding the essence and methodology of building business models allows you to better understand a specific business's conditions and the relationship between its various aspects. It helps build awareness of the type and intensity of activities aimed at increasing the competitiveness of the organisation, leading to the possibility of generating better financial (and market) results than competitors.

The business model is related to both the competitive strategy and the way of building value for customers, and consequently, generating financial results. Enterprises achieve different levels of profit that change over time with different dynamics. On the one hand, it can be pointed out that the sector of activity significantly influences the profitability of a specific business. It is with this that the framework in which a specific company operates is related. No wonder then that market players cooperating with companies from various sectors (such as banks or insurance companies) conduct their analyses of sectoral conditions that determine strategies for differentiating the terms of the offer for different sectors.

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Many authors tried to build a tool that could be used for practical analyses and planning of the company's activities. The leading approach to identifying and describing a business model's components is the Business Model Canvas by Osterwalder and Pigneur (Figure 1).

Key Partners	Key Activities	Value Propositions	Customer relationship	Customer segments
	Key Resources		Channels	
Cost structure		Revenue streams		

Figure 1. Business Model Canvas by Osterwalder and Pigneur. Source: Osterwalder and Pigneur [2010]

The starting point of the Business Model Canvas is determining the Value Proposition for a given market segment. The value proposition is one of the key elements of this model. It is a response to the real needs of the end customer who will use them.

Analytical tool - Value Proposition Canvas (VPC) - helps to focus attention on the two initially most important elements of Business Model Canvas. VPC makes it easier to analyse, design and, above all, choose the right solution for the needs of customers. Importantly, it does it in a structured and visual way (Figure 2).

VPC is based on the so-called "Customer pains" and "Customers gains". Pains arise during planning, implementation, or after the customer performs tasks based on competitors' products/services. They concern all kinds of economic and psychological elements, such as negative emotions, risks, unforeseen situations, and costs. Gains can be all kinds of positive emotions, social benefits, satisfaction, savings, increased profit. Think about what makes the client happy, what solutions they like, what makes their life better. Finally, try to choose the key, most important benefits that guide him/her.

From the VPC perspective creating value for the client is either relieving their pain or enhancing the benefits he/she gets. Starting with the pain, it needs to be considered how the solution you proposed in the previous point affects our client's pains. Does it lower their negative emotions, risks, the likelihood of unforeseen situations and costs? At the end, of course, mark the most important ones. Just like the client's pains are analysed, analyse the benefits that the proposed solution offers. Of course, refer to the previously determined positives desired by the client. Think about how your solution will generate positive emotions, social benefits, save time, increase income/profit for the client. As always, try to choose the most important benefits at the end.

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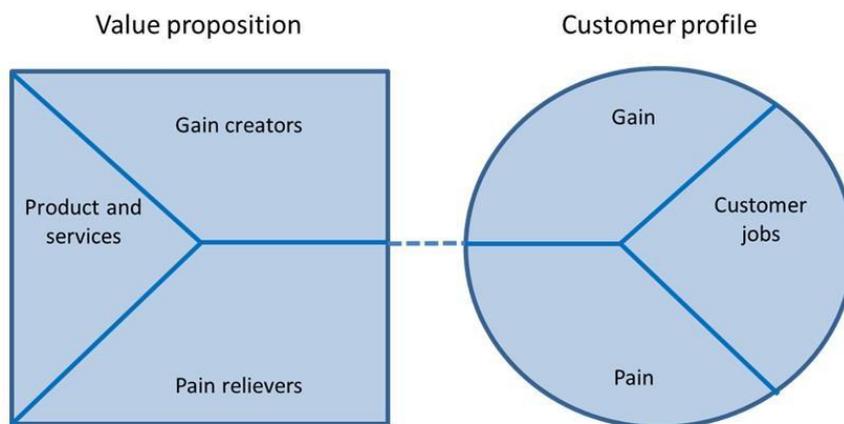


Figure 2. Value proposition canvas (VPC). Source: Osterwalder, Pigneur and Papadakos [2014]

Business Model Canvas, after defining the clients and the value proposition, should be supplemented with an indication of the channels through which these values will be delivered and the method of communication with clients and specifying the nature of the relationship with them. The elements of the Business model Canvas are briefly characterised in Figure 3.

	Key elements	Description/questions to be answered
1	Customer segments	List max. three the top segments. Look for the segments that provide the most revenue.
2	Value proposition	What is the job you get done for your customer? Why they buy your products?
3	Key activities	What do you do every day to run your business model?
4	Key resources	The top three resources - people, knowledge, means, and money you need to run your business.
5	Key partners	List the main partners that you can't do business without (usually not suppliers).
6	Customer relationships	How does customer relationship show up? What does the company do to maintain the relationship?
7	Channels	How does the company communicate with customers? How do you deliver the value proposition?
8	Revenue streams	Where the money comes from to your company? List your top (up to three) revenue streams.
9	Cost structure	List your top costs by looking at activities and resources.

Figure 3. Characteristics of the Business Model Canvas components. Source: own development

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Business Model Canvas is now widely known and widely used. It combines market aspects (value proposition, market segment, and channels of customer communication and distribution) with the economic and financial dimension (key resources, income sources, cost structure). On the practical level, it quite precisely identifies the key elements that coherently create and describe the way of building (or analysing) and delivering value and deriving financial benefits from it.

The popularisation of the Osterwalder and Pigneur approach resulted in the creation of its variants, which, for example, are directed at specific situations of enterprises. One of them is Lean Canvas, dedicated to planning business models of newly emerging companies [Maurya, 2012]. Lean Canvas focuses on solving broadly understood customer problems and formulating solutions and delivering them to specific segments simultaneously. It omits the elements relating to the organisation of an existing business, such as analysis of key resources or operations in an existing company (key processes).

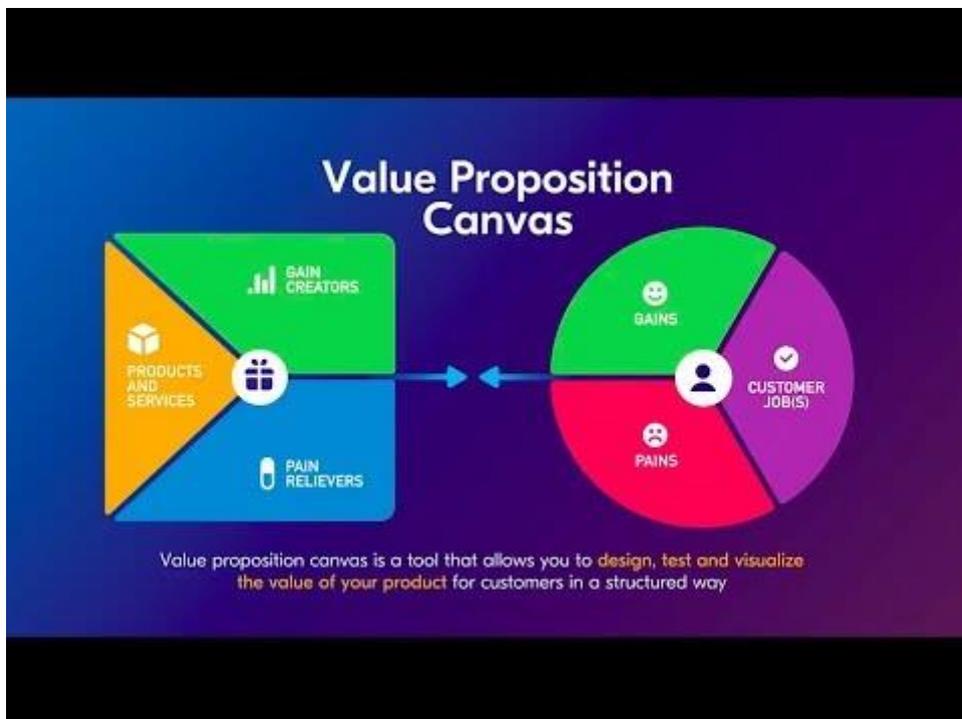
Due to the high complexity of the challenges related to building and modifying market models, it is worth considering some comments that will help in this process. The most important of them include [Kaplan, 2012]:

1. Broad perspective - it is worth adopting a perspective in creating a business model that goes significantly beyond the conditions of a given organisation. This increases the ability to identify potential opportunities that exist in the environment.
2. Beyond the Average - Modern market struggle often requires questioning and redefining the rules in the sector, so being ready to accept non-standard solutions will contribute to improving the quality of the model building process and its effect.
3. Confronting visions - you should confront different points of view and attitudes and try to find arguments for and against each option.
4. Customer point of view - one of the key conditions for a good business model is to involve customers in the creation process. This can happen in different ways, using different methods (see above), as customers are not necessarily aware of their preferences, selection criteria, or motivations. Customers should also be an important part of the commercialisation process.
5. Storytelling - the use of the storytelling approach during the model-building process contributes to a deeper understanding of the problem's essence and improves team communication.
6. Creativity - creating business models not using a technical procedure, but a process based on thinking creatively and open to innovative solutions, which should be supported by technical procedures but not guided by them.



7. Reach higher - it's often not about minor improvements but about creating a breakthrough solution. Therefore, one should not be content with easy, obvious solutions.
8. Continuous experiment - experimenting is both testing new solutions and learning from the conclusions of the experiment and formulating new ideas for testing. It is a continuous process.
9. Time - working on a new business model is not an end in itself. So, it has to be limited in certain time frames. Awareness that competitors are analysing new options should be conducive to setting challenges and their efficient implementation.

Use Value Proposition Canvas tool - Uber case



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The Business Model Canvas as tool

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Exercise - Multiple Choice

Value Proposition as the component of the Business Model Canvas refers to:

- The value of the new company technology.
- The value of the company's assets.
- The value offered to the target customer group.
- The value of the revenue stream.

Business models comparison

Modern business models have been under strong pressure from the Internet for several years, and e-commerce is becoming an integral, important part of the economy. At the same time, the increasing diversity of these models is visible. E-commerce means a significant diversification of behaviour and the search for new values. Figure 4 shows how the business model concept may be used to compare different companies' ways of operation. It provides an example of three firms, which operate in the same sector but use completely different business assumptions and therefore configure differently.

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Figure 4. Comparison of the business models components - case of e-commerce companies. Source: own development

In the case of Amazon.com, we are dealing with the largest online store globally, operating on a global scale, which began in 1995 with the sale of books, and today is present in almost all segments of the consumer market. It operates based on its distribution centres, generates revenues of around USD 280 billion (2019), and employs an astronomical number of over 800,000 (2019) people based on various contracts. The company's main revenue streams are generated from sales of physical products and e-products and commissions (e.g., related to the Kindle platform). Hence, the key resources are huge logistic centres and a logistics system supported by an internet platform.

In the case of eBay, it is significantly smaller than its predecessor. It generates revenues "only" of less than USD 11 billion (2019), with as much as 40 times less employment, because it is slightly above 14 thousand (2019). However, eBay's business model only provides a checkout platform to third parties, so it does not own goods, warehouses, or other components of the logistics network. Its revenue is generated from commissions from transactions entered into by independent companies with individuals through the eBay platform. Hence, its key resources include a transaction platform and human resources qualified in the field of internet marketing.

OLX implements another e-commerce model. With approx. USD 1 billion in revenues (2019) and four thousand employees. Acting in e-commerce, it does not deal with transactions that are carried out by bidders and buyers completely independently of OLX, and its main sources of income are related to various forms of advertising on the Internet (e.g., Google AdSense) and the purchase of premium services in the field of exposure sales offers.

Exercise - Multiple Choice

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Amazon.com, eBay and OLX are ecommerce companies, however their business model differs with respect to:

- Sources of revenue streams.
- Key resources.
- Cost structure.

- All the above answers are correct

Business plan development for project implementation

Business plan - introduction

Planning is a process that takes into account the environmental conditions as well as the present and future. We plan our business today, taking into account the anticipated situations that may happen in the future.

A business plan is a special type of plan to achieve positive results. A business plan, like a good roadmap, is to lead to the goal of launching the venture, making profits and developing the company.

Achieving business goals is not possible without systematic monitoring of the implementation of tasks included in the plan, leading to the achievement of the next goal. Of course, unexpected situations can always happen that are difficult to define while writing a business plan, but you have to take them into account. Business planning is planning a procedure aimed at identifying and eliminating problems that hinder the achievement of business goals.

An important task of a business plan is to conduct an analysis of opportunities, opportunities and threats, to evaluate various options for introducing products and services to the market and to select them.

Why do you need a business plan?

The resignation from developing a business plan as an unnecessary and troublesome obligation, already at a loss, calls into question the future success of the venture. A business plan is a necessary starting point in business.

Working independently on a business plan, you learn about the maximum number of factors that can affect the entire concept of the company's development and the decisions made. A business plan is a document that contains information about a venture, describes its organisation as well as projected costs and expected profits. If the profit and loss account shows no net profit, or worse, a loss, you should withdraw from the idea or re-analyse the entire project, identifying its weaknesses.

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Many candidates for entrepreneurs are convinced that a business plan is unnecessary because they have an idea for a business in their head and do not have to put it on paper. However, writing a business plan helps you focus and develop your ideas. Priorities are identified. Non-priorities are dropped, saving your time and resources. Experienced entrepreneurs know that only a few ideas withstand a collision with a "sheet of paper". Moreover, putting the plan in writing makes it easier to spot any gaps.

A business plan cannot just "charm" with extraordinary profits. To be able to make the right decisions at every stage of operation, a good business plan must show the truth about the initiated business.

It is worth remembering that the costs of launching and liquidating an unsuccessful venture are higher than the time and price of the paper on which we place the "false" business plan. The effort put into the business planning process brings you closer to success.

You need to explain your business to others

A business plan is essential if the business needs to raise finance from a bank or outside investors. Sometimes a business plan is required by government institutions or agencies.

A good plan can help you attract partners in a project team, as well as business partners such as distributors and agents. The plan should be tailored to the target audience. For example, you may want the plan to 'sell' the business to your bank manager or investors. So, it is worth asking the intended recipient if there are any specific issues they want the plan to address or a template you should follow.

Features of a good plan

Planning is a tool for the development of an enterprise, and verification of the results achieved. A good plan should be:

- Purposeful - indicating a sequence of actions leading to the goal.
- Feasible, that is, possible to achieve the assumed goals with the help of possessed and obtained funds.
- Consistent in terms of internal consistency and continuity, intentional logical consequences of activities preparing for subsequent events.
- Operative - enabling the transition from its indications to their practical application.
- Rational - cognitively grounded, which means that it is properly saturated with knowledge about the regularities prevailing in the intended action.
- Flexible - possible to adapt to changing circumstances.

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- Complete - taking into account every important aspect that should be included in the plan.

Summing up, we can assume that a business plan is a project plan that includes:

1. A set of structured goals and the resulting tasks,
2. An overview of the methods of their implementation along with an indication of the means and deadlines for implementation, and
3. A set of documents justifying the feasibility of the project.

A business plan is prepared for a period of up to 2 years, and sometimes 2-5 years. In the modern economy, due to the advancement of technology, legal changes, social changes, plans prepared for periods longer than two or three years have little chance to prove themselves in practice.

Designing of a business plan

The form and structure of a business plan are related to the purpose for which it is created. The accents are laid out differently in the case of establishing a new enterprise, differently when it concerns an enterprise consisting in planning a development project for an already existing enterprise, and also different when the business plan concerns the reorganisation of an enterprise in a crisis. It is also emphasized that there is no universal form of a business plan. Its concept, content and layout depends on the author, the requirements of the internal or external recipient, and also, and perhaps above all, on the specificity and individual character and needs of the business.

The general goal of each business plan is to define and present the assumptions of the project, confirming the effectiveness of the planned business. Any business plan should have the following features:

- Reality-based plan – otherwise it may be counterproductive.
 - Over-optimistic forecasts can lead to increased overheads, followed by a cash flow crisis and drastic cost-cutting.
 - Be realistic, even if you are selling the business to a third party. Investors or business partners will see through over-optimistic plans that ignore weaknesses or threats. Credibility can be damaged or lost.
- Conciseness - keep the plan short and clear.
 - Clearly formulated goals.
 - Focus on what the reader needs to know.

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- Cut out any waffle.
- Detailed business plans are often quickly shelved because they are difficult to use on an ongoing basis.
- Include any detailed information you need in an appendix, like, e.g. detailed financial forecasts and assumptions, market research data that backs up what you say, or CVs of management team members.
- Quality - Make the plan professional.
 - Put a cover on it.
 - Include a contents page, with page and section numbering.
 - Start with an executive summary. This summarises the key points, starting with the purpose of the business plan.
 - Use charts, if helpful.

A business plan usually doesn't exceed 45-50 pages, but limiting the number of pages is not a mistake. The value of a business plan is shown not by the number of pages, but by its content, which exhaustively explains the purposefulness and effectiveness of the project. The main part of the study should contain the most important findings. Market research results, technical expertise, calculations, letters of intent, charts and other documents, in the authors' opinion important for the quality of the study, should be included as attachments. Including a table of contents will allow you to navigate through the various parts of the business plan freely.

Here is an example of a business plan structure:

1. Cover page.
2. Summary of the business plan - executive summary.
3. Characteristics of the project and products.
4. Market and competition.
5. Marketing and sales strategy.
6. Organisational plan.
7. Characteristics of the management and personnel.
8. SWOT analysis.
9. Project implementation plan.
10. Financial plan.
11. Sensitivity analysis.
12. Attachments.

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Exercise - Multiple Choice

Which topic should not be a part of the business plan structure:

- Market and competition.
- Detailed technical documentation of the product.
- Organisation plan.
- Financial plan.

Writing a business plan

The business plan should fulfil two functions at the same time:

- Internal - when it is treated as a planning document intended for the organisers of the project.
- External - when it is to be made available to external institutions, such as banks, governmental and non-governmental organisations supporting the development of innovative business, regional development agencies.

When writing a business plan, you should ensure a clear graphic layout that allows you to easily navigate through the following chapters and subchapters of the study. The use of the appropriate font, numbering, bold and table of contents will undoubtedly facilitate not only reading but also the use of the business plan. The business plan opens with a title page and table of contents informing about the following chapters.

1. Cover page

The cover page is like a business card that gives the first information about us and our project. On this page, we put the name of the document (Business Plan), the name of the venture/enterprise, place and date of the business plan. If we have developed a logo, we can put it next to the company name. You should also indicate the location of the investment, the cost of the project, the contact person and put signatures and seals (if they are already in the possession of the authors).

2. Summary of the business plan - executive summary

The executive summary is an essential part of the business plan that we write after completing the entire document. The volume of the summary should fit on one or two pages, and contain the most important information about the content contained in the presented document. The executive summary serves as an introduction to the business plan. To fulfil this role, it should contain the following content:

- A brief description of the project and the goal (s) to be achieved.

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- If the company already exists - briefly describe its characteristics.
- Project partners and their potential.
- Indicate what the business opportunity is and how the planned business will use it.
- Indicate the target market and sales growth prospects, provide the planned pricing strategy.
- Emphasise your competitive advantage over competitors and its attractiveness for potential recipients (e.g. healthy food, cheap renewable energy).
- A summary of the management team and (if necessary) key employees or associates.
- Expenditure on launching the project, financing, sources of financial support.

3. Characteristics of the project and products

When presenting an idea for a business venture it is worth pointing to the sources of the idea that emphasise its legitimacy:

- When did it start trading and what progress has it made to date?
- If the business is a new start-up, what is your personal industry background and what progress towards launching the business has been made?
- Who owned the business originally?
- What is the intellectual property ownership structure?
- What is the current ownership structure?

This part of the business plan describes the product offered, its innovation and competitiveness in the market, and the production process. It is advisable to present the product against similar products and services offered by competitors. Avoid technical jargon if possible. Describe:

- In general, what makes your product or service different?
- What benefits does it offer for end-users? What are its disadvantages, and how will you address these?
- What changes and improvements are you planning?

In this chapter, you must also indicate the goals and objectives related to business development, present the legal form, location, planned size and name of the company.

4. Market and competition

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The basis of the marketing plan is a market analysis in which both the micro-environment and the macro-environment in which the company will operate are analysed.

Micro-environment is the immediate environment of the company that affects the customer service process: suppliers, distribution channels, competitors, social organisations and the company itself.

The macro-environment is the demographic situation, the economic policy of the state, the natural and cultural environment, the political environment and the applicable legal solutions in the field of running a business in a given sector.

The key is to recognise the characteristics of the market. The description should cover:

- Highlight the segments of the market in which you compete. What are the key characteristics of customers in each segment, and what influences their purchasing decisions?
- How large is each market segment in € (approx.)? What is your market share?
- What are the important trends, such as market growth or changing tastes? Explain the reasons behind the trend.
- What is the outlook for each important market segment?

The products and services should be easily accessible by the target segment customers. Description of the distribution should cover:

- Do they fit the profile of the chosen market segment? If not, why not?
- Is there a heavy concentration of sales around one or two large customers?
- If you are a new start-up, do you have any confirmed orders and who are your best prospects?

The description should include the characteristics of the main competitors. Competitors should not be openly criticised or underestimated:

- What are the competing products or services? Who supplies them?
- What are their advantages and disadvantages compared to company products?
 - Features like: price, quality, distribution.
- Why will customers buy your product or service instead?
 - How will competitors react to losing business?



- What will the company's response be?

As important as analysing consumers and competitors is making a broader assessment of the competitive forces operating in a given sector. They can influence the company's development and attractiveness for investors. This can be done using Porter's Five Forces analysis model (Figure 1).

Competitive rivalry refers to competition in the sector. It partly deals with the number of competitors and their ability to undercut a company. The larger the number of competitors, along with the number of equivalent products and services they offer, the lesser the power of a company. Conversely, when competitive rivalry is low, a company has greater power to charge higher prices and set the terms of deals to achieve higher sales and profits.

The threat of new entrants deals with potential competition, that is all companies that can enter the market and the industry. You have to take into account not only the companies that already exist and may expand their business to our industry but also those that may arise in the future. The threat of the emergence of new competitors can be assessed by analysing entry barriers. Barriers to entry are those factors that prevent or in any way hinder new companies from introducing their products or services to our industry.

Sometimes the barriers are obvious - such as licenses or concessions or the existing infrastructure. Other times, they may be less obvious, such as economy of scale, access to technologies, access to distribution channels, state legislation etc.



Figure 1. Porter's Five Forces.

The threat of substitution. The risk occurs if the product offered on a given market can be replaced

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with something else (such as butter, margarine, or coffee cream with milk in a carton), then companies in a given market compete not only with each other but also with companies producing a substitute. If there are large price fluctuations between substitutes, consumers will choose the cheaper one. That is why you should follow what is happening in industries that can produce substitutes for our product. This may be of particular importance in new technology markets. The simplest example is the mobile telephony industry - phones have become, in just the last few years, a substitute for portable music playback devices, as well as portable organisers and small personal computers.

The bargaining power of suppliers. Each company operating in the market must obtain materials and services thanks to which it produces its production. If resource providers have bargaining power, they can charge high prices, increasing the cost of producing a product and thereby reducing profit. Suppliers' bargaining power is influenced by factors such as:

- The number of suppliers on the market - the smaller the number of suppliers, the greater their bargaining power, because of the less competition between them.
- Whether suppliers can sell goods directly to the end market, in such a situation, enterprises in the market must operate on margins that are low enough for suppliers to undertake such a venture.
- Whether the costs of switching suppliers are high - the company must have a good reason to decide to look for a new supplier. If the costs of switching suppliers are low, their bargaining power is also low.

The bargaining power of customers. When the buyers' bargaining power is high, they can influence the price level in the market. Factors influencing the bargaining power of recipients:

- Quantity - if the recipients are few or they are organised into groups purchasing together - then their power is high. This is the case with large retail chains or large customers. These companies often take a significant part of the production of a given contractor, having a significant impact on their existence on the market. In such a situation, these companies can dictate prices, significantly reducing sales margins.
- Products - if the products offered by competitors do not differ, the customers do not care from whom they buy the goods. In such a situation, customers have a strong bargaining position and could threaten the supplier that if they do not lower prices, they will move to competitors.

Watch video-case "Porter's 5 Forces Explained" at [YouTube](#). This provides examples of the use of Porter's Five Forces analysis in business planning.

5. Marketing and sales strategy

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The promotion plan, also known as a marketing strategy, should contain a list of the offered products, their prices, promotion methods and distribution channels through which it will sell its products and services. Effective help in building a marketing plan is to use the marketing mix and analyse the characteristics of the product, its price, distribution and promotion.

The basic questions about the product are those that relate to the position of the product or service in the market:

- Is it high/low quality and high/low price?
- Is it marketed as a specialist product due to a particular feature?
- Do you provide unique benefits to customers? For example, product design, product reliability or excellent customer service.

Factors regarding pricing policy:

- Explain how price-sensitive your customers are.
- Look at each product or market segment in turn. Identify where you make your profits and where it may be possible to increase margins or sales.
- Set your pricing accordingly.

Elements related to the description of product or service promotion:

- Each market segment will have one or two promotional methods that work best. They should be closely related to the characteristics of customers from a given segment. For example, direct marketing, advertising or PR.
- If you are planning to use a new marketing method, try to start on a small scale. Investment in promotion activities is costly.

What sales channels do you use to reach your target customers?

- For example, do you sell directly to the customer, or through retailers or agents? Do you sell online?
- Compare your current channels with the alternatives. Note the distribution channels used by your competitors.
- Look at the positive and negative trends in your chosen distribution channels.

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Description of the selling methods:

- Look at the cost-efficiency of each of your sales methods, like regular shops, a direct sales force, through an agent or over the Internet.
- Include all the hidden costs, such as management time.
- Explain how long it takes to make sales (and to get paid for them), what the average sales value is and how likely customers are to give repeat orders.

6. Organisational plan

The organisational plan presents the organisational chart of the future company, the planned departments of the company, functions of the management staff, relations of reporting employees and the number of employees. It also covers the principles of remunerating employees and their employment costs. One should also pay attention to the mode, rules and anticipated financial outlays for courses and training related to improving employees' qualifications.

Remember to cover all key areas of company operation like production, sales, marketing, finance and administration. Explain your recruitment and training plans, including timescales and costs. The plan should also cover possible outsourcing operations. Depending on the legal form, the number of employees and turnover, a decision should be made on the type of accounting.

7. Characteristics of the management and personnel

People play a decisive role in any endeavour. The success of the enterprise depends on their knowledge, skills and experience. High competences of the managerial staff and access to qualified personnel are half the success of the organised business.

The business plan should indicate the current status of recruiting staff and indicate the sources of the inflow of staff and forms of improving their skills. An essential element is to indicate the competences of the future boss and management as the driving force behind the establishment and development of the company.

Documents confirming possessed competencies, certificates, certificates of completed courses, achievements and professional experience of the staff may be attached as an attachment.

8. SWOT analysis

Summarising the possibilities of effective functioning on the market, it is advisable to conduct a SWOT analysis. This is a technique for assessing the performance, competition, risk, and potential of a business, as well as part of a business such as a product line or division, an industry, or other entity.

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Identifying core Strengths, Weaknesses, Opportunities, and Threats (SWOT) lead to fact-based analysis, fresh perspectives and new ideas. See the SWOT matrix in Figure 2.

<p>Strengths</p> <p>1.</p> <p>2.</p> <p>3.</p>	<p>Weaknesses</p> <p>1.</p> <p>2.</p> <p>3.</p>
<p>Opportunities</p> <p>1.</p> <p>2.</p> <p>3.</p>	<p>Threats</p> <p>1.</p> <p>2.</p> <p>3.</p>

Figure 2. SWOT matrix

Strengths - these are internal-positive factors - strengths, i.e. values of an organisation that positively distinguish it in the environment and from the competition, key success factors of the organisation enabling it to adapt to the changing conditions of the market environment.

Weaknesses of the company are negative internal factors. - resulting from resource constraints and insufficient qualifications of employees and management. Weaknesses are also associated with all other areas of operation that limit the efficiency of its operation and response to changing customer requirements and the activities of the competition. The business areas analysed are identical to those presented above for the strengths.

Opportunities - these are all existing or anticipated processes, phenomena and trends occurring in the environment of the organisation, which, if properly used, can become an impulse for its development and help to reduce the impact of possible emerging threats.

Threats - all the processes, phenomena and trends occurring in the environment of the organisation that constitute or may constitute a barrier to the development of the organisation, hinder its functioning, increase operating costs or may lead to the company's collapse. As a result of the analysis, four independent lists of factors are obtained, i.e., strengths of the organisation (which should be strengthened), weaknesses (which should be eliminated), opportunities (which should be used), and threats (which should be avoided).

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Watch video-case "Starbucks SWOT Analysis" - [the link to the video](#). It provides an example of SWOT analysis used for the strategic analysis of the company.

9. Project implementation plan

The detailed implementation schedule of the planned project aims to organise and impose deadlines for the implementation of tasks and subsequent steps in the company's development.

Tasks, grouped into work packages, should be subordinated to the timely implementation of a specific goal. The implementation schedule sets a "critical path" for subsequent activities, the delay of which may disrupt the execution of the entire project. The tools used in this part of the business plan include milestones and the Gantt chart

Milestones are a practical planning tool. They mainly summarise the activities to be undertaken in the project. So, each action ends with a milestone. Thanks to this approach, the business plan becomes a real plan, containing specific and measurable activities, and not just a document containing generalities.

The Milestones table is one of the most important in a business plan. It helps to present the plan in practical, concrete conditions, with actual budgets, deadlines and management responsibilities. It helps you stay focused when writing a business plan, then the Milestones table and plan management vs. reality analysis help you implement the plan as your business grows.

Milestones facilitate real project management. For example, during a team meeting, they provide data for discussion of the relevant milestones for that time period. They indicate specific topics for discussion, like budget, time or possible plan corrections related to milestones.

The Gantt Chart is a graphical way to plan and control. Planning and coordinating the course of various activities over time plays an important role in creating and functioning of the organisation. Gantt charts are used to plan multi-agency activities, both team and group. They present the sequence of successive events, also taking into account the tasks performed in parallel (see Figure 3). Thanks to this technique, it is also possible to control the implementation of a planned project.

The primary goal is to support the project manager's work by emphasizing the relationship between tasks and the impact of potential changes on the entire project. It also allows you to perform a simulation that allows you to identify proposed changes to specifications, resource availability and set deadlines. The Gantt chart is also instrumental in optimising the first "realistic" version of a project plan.

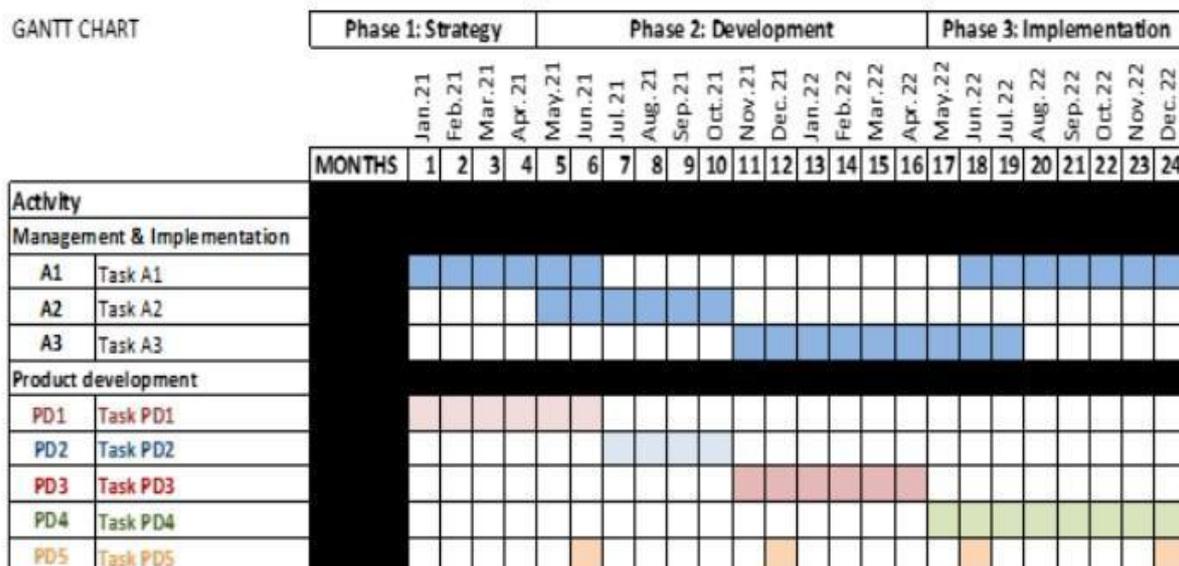


Figure 3. Gantt chart example. Source: own development

10. Financial plan

The financial plan, unlike the earlier qualitative parts of a business plan, is a quantitative plan. Provide forecasts for the next three (or even five) years. It illustrates the costs of the project, revenues from the sale of products and services, the statement of possible losses and profits, assumptions for the balance sheet for the next year and cash flows.

The sophistication of your financial forecasts should reflect the sophistication of your business. A small business may only need sales, profit and cash flow budgets. In the case of a more complex business balance sheet forecasts will be needed as well. Clearly state the assumptions behind the forecasts. These should be in line with the rest of the business plan; otherwise, it may damage its credibility. For example, if the plan states that the market is becoming more competitive, profit margins should probably be falling.

It is crucial to be realistic about forecasts in new markets. For example, how much resource can be devoted to selling, what success rate can be expected, and how long will it take to convince new customers?

The overall trends of historical and forecast numbers should be taken into consideration. For example, do the forecasts allow for the possibility of problems and delays in payments that could affect cash flow?

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A cash flow forecast is handy to predict the future financial needs of a new venture. It is worth assuming an additional contingency element to the financing demand presented in the forecast (perhaps 10-20%).

The financial forecast should specify what types of external financing will be used, especially when it comes to equity investors or entering the capital market. The need for long-term loans or working capital should also be taken into account. Of course, this should take into account the likely interest or dividend costs of any new financing. Besides, explanations are provided as to why funding is required and what it will be used for.

11. Sensitivity analysis

When planning to launch a business venture, it should be determined at what level of sales the total costs will be covered. This is possible, thanks to the break-even point (BEP) analysis. At this point, the profitability is zero, and an increase in sales, with unchanged costs, brings a profit. A drop-in sales below the break-even point means losses.

Profitability analysis informs about the minimum sales volumes necessary for the project to be profitable. This is important information because already at the stage of planning the project, you have to decide whether to continue or not to start the business. Knowledge of the quantitative, valuable and percentage break-even point is an absolute requirement for the creators of the venture.

Sometimes the break-even analysis should be supplemented with the break-even sensitivity analysis, which allows you to calculate the impact of a change in the unit selling price, unit variable costs or fixed costs on changes in the break-even point. At this stage of work on the business plan, it is worth inviting an efficient financier as a consultant.

12. Attachments

Depending on the needs, the business plan includes attachments with information supplementing the text of the business plan. They may include additional detailed explanations, financial simulations, CVs and photocopies of management diplomas.

Attachments can also be used as authenticating material for the data contained in the content of the business plan, e.g. market research results, letters of intent from recipients interested in purchasing products.

Agreements on cooperation partners, in particular those relating to intellectual property, are a special annexe. They authenticate the position of the project team as the holder of knowledge and intellectual property.

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To make the reader aware of some aspects of the project, you can attach a location map of a new company, photos of new products, patterns of promotional elements or logo designs.

Five Forces tool - a Practical Example



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SWOT Analysis in practice - case of Starbucks

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Exercise - Multiple Choice

Please indicate which element is used in the SWOT analysis:

- Weaknesses.
- Values.
- New entrants to the market.
- Key processes.

Exercise - Multiple Choice

Which tool is used to plan and present the sequence of successive events, also taking into account the tasks performed in parallel.

- SWOT analysis.
- Value Proposition Canvas.
- Porter's Five Forces.

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The Gantt Chart.

Business plan – common mistakes

Creating a business plan takes some effort and your own work. It is not worth outsourcing the development of a business plan to a consulting company in the belief that they will do it better than us. The business plan is to serve our venture, and we will bear the consequences of the "shortcomings". This does not mean that we should give up all outside help and support. Errors can arise either at the stage of creating a business plan or later during its implementation. The most common shortcomings include:

- Overly optimistic financial forecasts - usually lowering costs and overstating revenues.
- Omitting financial matters - it will be perceived as a lack of knowledge about the financial side of the project.
- Too extensive.
- Too specialised language of description - using professional jargon.
- Disturbed structure of the business plan, e.g. disproportions between the technical description of the product and the marketing and financial part.
- Disregard for competition.
- Lack of realism and objectivity in the presentation of the project - hiding weaknesses behind "wishful thinking" to divert attention from problems.
- Disregarding the risks associated with a missed start.
- Incorrectly formulated goals, focusing on qualitative goals and omitting quantitative goals, the excessive number of goals, confusing tasks to be performed with goals.
- Creating a business plan according to the expectations of an external recipient, which makes the business plan look like a commercial prospectus and not a useful work tool in business.
- Low flexibility of the plan, which prevents the occurrence of situations forcing changes in the business plan.

These mistakes can be avoided, provided that we find enough strength to "not fall in love" with our business idea and look at it through the eyes of a client or banker looking for a "hole in the whole". It is difficult to acquire customers in a world of readily available information on where to buy the product you are looking for at a lower price.

Let's look at our business and the offered product through the eyes of customers. The client knows the way to our competitors very well. Let's get to know our competitors and their offer in detail before we

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write in the business plan that "our product has no competition". There may be no such product on the market, but there are others at an attractive price that fulfil the functions expected by the customer.

To know the competition is to know yourself. Knowing the functioning of enterprises and the market of the sector we are interested in is a step towards getting to know customer expectations. Remember that it is the market that verifies every offer.

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Innovation marketing

Introduction

This part of the course provides information about selected marketing activities which an innovative company has to manage.

Companies offering new products or technologies in fact enter new markets. Therefore, they have to investigate the main characteristics of this new area. The first part of the module presents basic information about market research.

Generally speaking, marketing is about providing value to customers. This is why every business project needs to identify the value, create it and effectively communicate it to the customers. The second part of the module concentrates on product development.

When the company is ready, it may intend to expand its activities in new, foreign markets. At the end of this part of the course, selected issues referring to internationalisation are discussed.

Marketing management process

Bookmark this page

To understand why innovations need marketing, please refer to: [Why great innovation needs great marketing](#)

The American Marketing Association defines **marketing** as the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. Exploiting marketing concepts, a company should anticipate the needs and desires of existing and potential consumers and satisfy them more effectively than its competitors.

A company implementing a marketing approach has to conduct a marketing process which means analyse market opportunities that arise, studying and choosing target markets, developing marketing strategies, marketing programs, organisation, implementation and control of marketing efforts [Kotler 2004]. Therefore, the key elements of the marketing process are:

1. The analysis which consists of collecting data and information to reassure necessary inputs in understanding:

a. External environment (opportunities and threats to the business/project/product),

b. Internal environment (strengths and weaknesses to the business/project/product),

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c. Needs manifested in the target markets,

d. Competitors,

e. Stakeholders of the company,

f. Consumers,

g. Dealers and suppliers,

h. General public.

2. Strategic planning – “a process of creating and shaping the future of the company, a process that consists of senior management efforts to focus on long term business and enterprise performance through a careful formulation, evaluation and substantiation of strategy” [Drummond 2001].

3. Implementation – the elaborated plan is adapted to market conditions as well as there is a budget assigned to these activities. A marketing plan must be consistent with the overall strategy of the company. According to Kotler, “the process that turns marketing plans into action plans and provides support for these plans to be executed in such a way as to achieve the objectives of the marketing plan”. [Kotler 2004]

4. Monitoring and evaluation – aimed at evaluating the efficiency of marketing activities and the ability to achieve goals set in the planning phase. Such evaluation should lead to changes (if necessary) of the marketing plan.

Industry 4.0 has a significant impact on marketing activities. These changes can be reflected by 5 principles: [Nosalska, Mazurek, 2019]

1. Co-creation – Industry 4.0 allows for more empowerment of customers in product creation – products are being co-created by customers.

2. Conversation – companies adopt increased dialogue with customers which allows them to benefit from long-term engagement and interaction.

3. Cooperation – competitive companies can benefit from cooperation instead of competition, for example by using a common data system or supply chains.



4. Cognitionity – thanks to the Internet consumers control process and can negotiate them. Companies instead have increased knowledge about consumer behaviour and can adjust their offer to the consumer's profile.

5. Connectivity – conclusion of the above principles. Connectivity is a core of Industry 4.0.

5C for Fourth Industrial Revolution

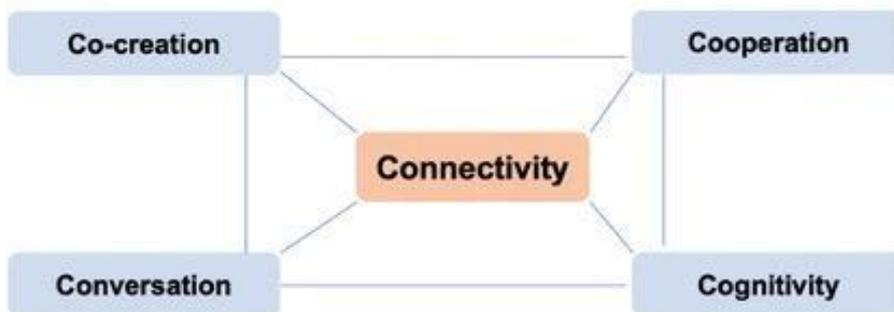


Figure: Marketing principles for Industry 4.0. Source: Nosalska K. Mazurek G (2019), Engineering Management in Production and Services 11, 3; 10.2478/emj-2019-0016

A useful explanation of a successful marketing campaign:



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For more tips on how to promote innovations, please refer to:

[Promoting innovation: 10 ways to promote innovation successfully](#)

For more information and examples of marketing in the high-technology sector, please refer to:

[A methodological approach to the marketing process in the biotechnology-based companies](#)

Market analysis

When entering a new market, it is essential to understand its characteristics which are crucial from the point of view of a given business/project/product. Market analysis is an “assessment which incorporates both quantitative and qualitative data to paint a clear picture of the tangible and intangible factors at play in an industry”. [Mouhanna, 2019]

Market analysis can be performed by the company which wants to enter a given market, but it can also be outsourced by hiring experts. Sometimes there are already prepared reports characterising given markets. When trying to use already existing data, you can turn to: [Mouhanna, 2019]

1) Comprehensive Industry Reports – extensive and wide in scope, offer a broad look at the industry. They include information about:

- Top-line growth rates,
- Forecasts based on market segmentation and market share by top products and competitors,
- Disruptions,
- Regulatory shifts,
- Consumer trends,
- Other factors that are expected to impact an industry.

1. Niche/Hot Topic Studies – in-depth studies of fast-growing or revolutionary new product segments which are likely to have a significant impact on their industries both in the short- and/or long-term.

2. Focus Reports – short-format market research reports based on qualitative and quantitative data. They are intended to provide quick insights on a large number of products and services. They focus on sizing, segmenting and forecasting markets, and identify key suppliers.

When no existing report or research is satisfying the company's need, custom research can be performed. Such custom research is tailored to the company's expectations and provides enhanced insights on decisions and initiatives such as:

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- Strategic planning,
- New product development,
- Geographic market expansion,
- Mergers and acquisitions,
- Competitive intelligence,
- Other.

When analyzing market potential, several methods and techniques are perceived to be useful:

1. PESTLE analysis – focuses on external factors which can affect business, which are: political, economic, social, technological, legal and environmental.
2. SWOT analysis – one of the most popular methods. Its name comes from the first letters of the English words: strengths, weaknesses, opportunities, threats. From this angle, the determinants of the functioning of the organisation are analysed.

Strengths and weaknesses refer to the internal environment of the organisation, while opportunities and threats flow from the environment. The SWOT analysis enables the company to use the opportunities the organisation is facing with the support of its strengths, avoiding or neutralizing threats, and minimizing the impact or removal of organisational weaknesses.

3. Portfolio analysis (e.g. BCG) – The BCG matrix (from the Boston Consulting Group name – Boston Consulting Group) is a method of analyzing the company's products, which is based on the assumption that the product line's ability to generate profits for an enterprise depends on the growth rate of a given market and the specific product's market share. When assessing the growth rate of a given market and the product's share in this market, four categories of products can be distinguished: stars, milk cows, question marks, dogs. Stars are products with the largest share in the rapidly growing market. Cash cows, in turn, are products with a very large market share, which, however, will probably no longer grow. Question marks are products on a dynamic market, but with a small share in it, their future is in doubt. Dogs are products with very little potential, which have a small share in a small "promising" market. This concept allows the company to formulate strategies referring to the identified groups of products.



VARIABLE				
MARKET POSITION OF THE PRODUCT	MARKET ORIENTATION	PROFITABILITY	NECESSARY INVESTMENTS	NET CASH FLOW
STARS	MAINTAIN OR INCREASE MARKET SHARE	BIG	SIGNIFICANT	ZERO OR NEGATIVE
CASH COWS	MAINTAIN MARKET SHARE	BIG	LITTLE	DEFINITELY POSITIVE
QUESTION MARKS	INCREASE MARKET SHARE	ZERO OR NEGATIVE	SIGNIFICANT	DEFINITELY NEGATIVE
	TAKE BENEFITS AND WITHDRAW FROM THE MARKET	LOW OR NEGATIVE	SMALL OR ZERO	POSITIVE
STARS	TAKE BENEFITS AND WITHDRAW FROM THE MARKET	LITTLE	SMALL OR ZERO	POSITIVE

Figure: Strategies towards products after BCG analysis. Source: Obloj, K. (2001) Strategia organizacji, PWN, Warsaw.

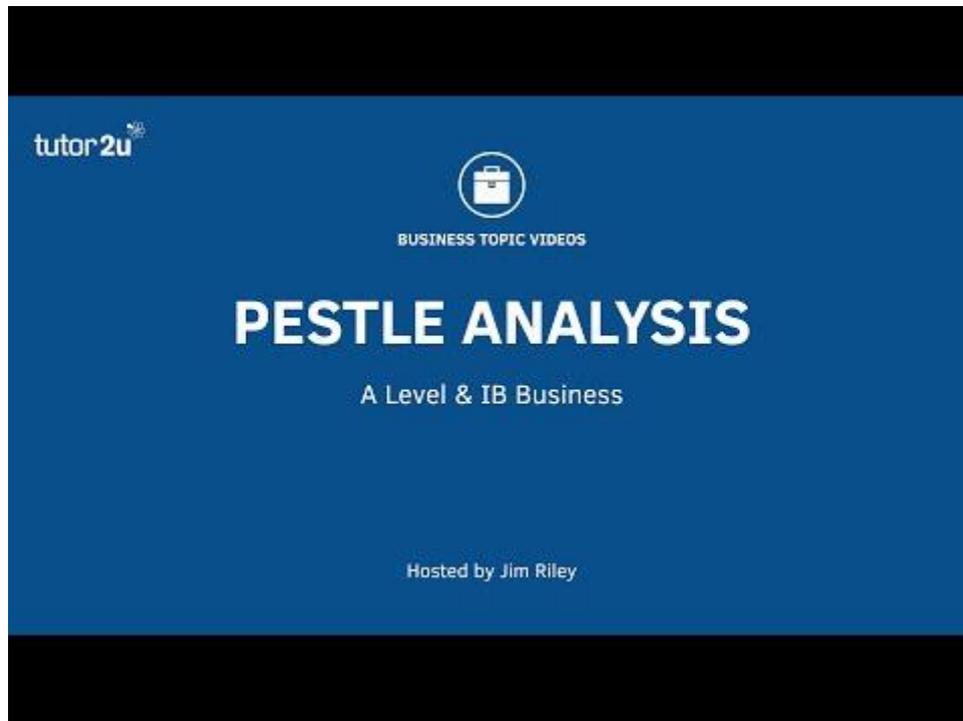
4. Five forces analysis – this analysis is especially useful when entering a market. It takes into consideration: threat of entry, the power of buyers, the power of suppliers, the threat of substitutes, and competitive rivalry.



Figure: 5 forces analysis. Source: https://www.mindtools.com/pages/article/newTMC_08.htm

To understand the analysis, please, refer to: [The Five Competitive Forces That Shape Strategy by Michael E. Porter](#)

PESTLE analysis



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SWOT analysis

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Exercise - Multiple Choice with Hints and Feedback

A group of products identified in BCG matrix which have very little potential and a small share in a little "promising" market is called:

- Cash cows.
- Dogs.
- Question marks.
- Stars.

Development of a new product

Stages of new product development

The process of developing a product innovation includes a sequence of activities aimed at identifying opportunities and preparing a product to enter the market.

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The following stages can be distinguished in the process of developing product innovations:

- Ideation,
- Selection of ideas for new products (screening the idea),
- Developing and testing the concept of a new product,
- Economic and financial analysis of the concept of a new product,
- Testing prototypes of a trial series of a new product,
- Marketing tests of a new product,
- Introducing a new product to the market and its commercialisation,
- Post-launch review.

For an additional approach to product development stages concept, please refer to:

[How to Develop a New Product \(From Concept to Market\)](#)
[Stages Process Steps of New Product Development](#)
[Five Phases of the New Product Development Process](#)

Ideation

The process of innovation development begins with the search for the idea of a new product (the so-called generating stage). It aims to collect as many ideas as possible. Sources of new ideas may come from organisational units of the enterprise (mainly the research and development department, marketing, production or sales departments). Another key area of new product generation is competition analysis. A very important source of information is the environment (mainly distributors and buyers). To generate radical innovations it is very important to acquire a deep insight into customers' needs. To find out more about why accessing deep customer insights is crucial to creating radical new products, please visit: [Creating Innovation Capabilities: Mölnlycke Health Care's Journey](#)

Some great ideas may consist in redefining existing solutions. To find out more, please, check the case study presented in the **Best practices of innovative companies' operation** module.

When searching for ideas, it is advised to consider the following sources as well:

- External experts or consulting companies,

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- Technical consultants,
- Professional publications,
- Scientific and research work carried out in universities or industry institutes),
- Professional organisations and associations,
- Patents, licenses,
- Exhibitions, fairs and conferences.

Selection

The collected ideas must be selected and assessed from the point of view of their reality, profitability and estimation of possible demand. You should choose a set of criteria which can help you decide whether the idea should be continued or not. There are various techniques to select ideas. An example is a decision matrix. First, you have to build a list of criteria. The criteria are assigned importance weights. The ideas of products are rated on a point scale which measures product compatibility. The rates are then multiplied by their respective weights and summed up to provide a total score for the new product idea.



Rating						
	Weight	Very good (5)(4)	Fair (3)	Poor (2) (1)	Unweighted Value	Weighted Value
Customer utilities						
-amusement	.1	X			5	.5
-comfort	.1		X		3	.3
-convenience	.2	X			4	.8
-satisfaction	.3	X			4	1.2
-easy to use	.1		X		3	.3
Ability to create effective sales appeals	.3	X			4	1.2
Price	.1			X	2	.2
Product quality	.2		X		3	.6
Product profitability	.2		X		3	.6
Attractiveness of product to customers	.1	X			4	.4
Ability to produce product in large volumes	.3	X			5	1.5
Ability of new product in helping sale of other products	.1			X	1	.1
Requires low capital investment	.3	X			4	1.2
Product can be produced through existing advertising	.2	X			3	.6
Product can be produced in existing facilities	.3	X			4	1.2
Product can be distributed through existing channels	.3			X	3	.9
Strength of competition	.2			X	3	.6
Patent situation	.1			X	2	.2
Total score					60	12.4

Figure: Example of a decision matrix. Source: <http://www.opentextbooks.org/hk/ditatopic/35290>

For other screening techniques, please visit the following site: [Screening Ideas for New Product Launch](#)

Development and testing a product concept

The next stage is the development and testing of a new product concept. This step is focused on the preparation of technical designs and technological documentation as well as building prototypes to adapt the appropriate features to the needs of future users.

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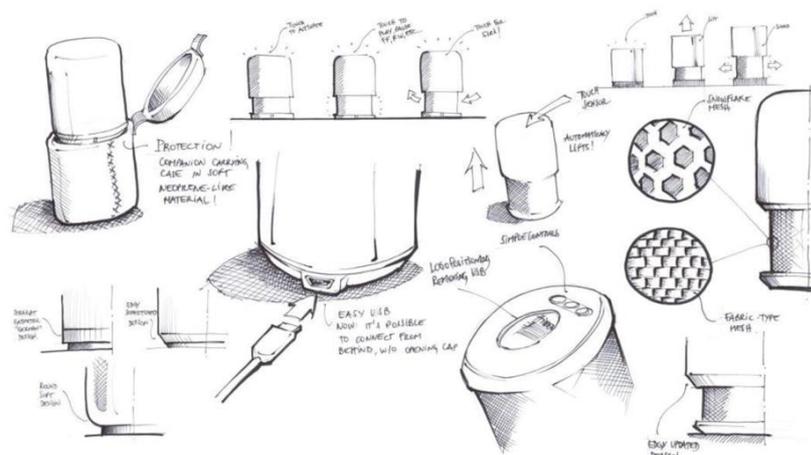


Figure: Sketches from prototyping Bluetooth speaker by Hidden Radio in a crowdfunding campaign. Source: <https://www.kickstarter.com/projects/2107726947/hiddenradio2-bluetooth-multispeaker/description>

During this stage, traditional methods are often used, like hand-drawn sketches, especially in the fashion and apparel industry, but not only. You need to visualise your product.

A special stage of the design process is the preparation of technical documentation related to the process of manufacturing a new product which should include:

- Details of the subsequent stages of the manufacturing process (subsequent operations specified in the technological and executive instructions),
- The required devices and instrumentation allowing for the change of product parameters depending on the customer's requirements,
- Manufacturing physical process characteristics, raw material and time standards for given operations,
- Elements of control and supervision over the process.

Economic and financial analysis

Then, an economic and financial analysis is carried out, the aim of which is to estimate the sales forecast, incurred costs (for research and development, production and marketing) and profits. The probability of the market success of an innovation is also the probability of return on investment related to its technical development and commercialization. To introduce a new product to the market, a company must analyse the expenditure incurred both for technical development and production, as well as for marketing activities.

Testing prototypes

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The next stage includes testing prototypes, which are subjected to both laboratory and production tests, as well as developing the packaging and labelling the new product. Accomplishing this stage in a single attempt is unlikely. It consists of experimenting with several versions and making improvements.

Prototypes have to be built in accordance to customer needs. A very useful method of transforming customers' demands into product parameters is a method developed in Japan called Quality Function Deployment or more usually "House of Quality".

Marketing tests

After receiving positive results at this stage, you can proceed to the marketing tests of the new product, consisting of making it available to potential buyers in real terms of purchase and checking whether customers will buy it. Particular attention should be paid to such customers' behaviour as trial purchase, first repeated purchase, speed of innovation adaptation or frequency of purchase.

The analysis of the reception of the product by customers should indicate what activities should be performed before the final implementation of the product on the market. What needs to be improved? What is working well enough already? The purpose of marketing tests is to answer the following questions:

- Did you understand the needs of your users well?
- Does your solution meet the needs of users?
- Do users understand your product / service?
- What has worked?
- What else can be improved?
- What is missing and what is redundant?
- What can deter potential users from your solution?

When these tests are also positive, the company can start introducing a new product to the market and its commercialization.

After accomplishing the preceding stages, you should evaluate the process efficiency to be able to improve it in the future.

Product launch and commercialization

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Product commercialization includes its production and distribution to the customers but must be accompanied by marketing activities and customer support. Customers must be informed about a novelty, get to know its features and a value they get buying the product. When launching a product, effective distribution and promotion must be prepared as well as a pricing strategy.

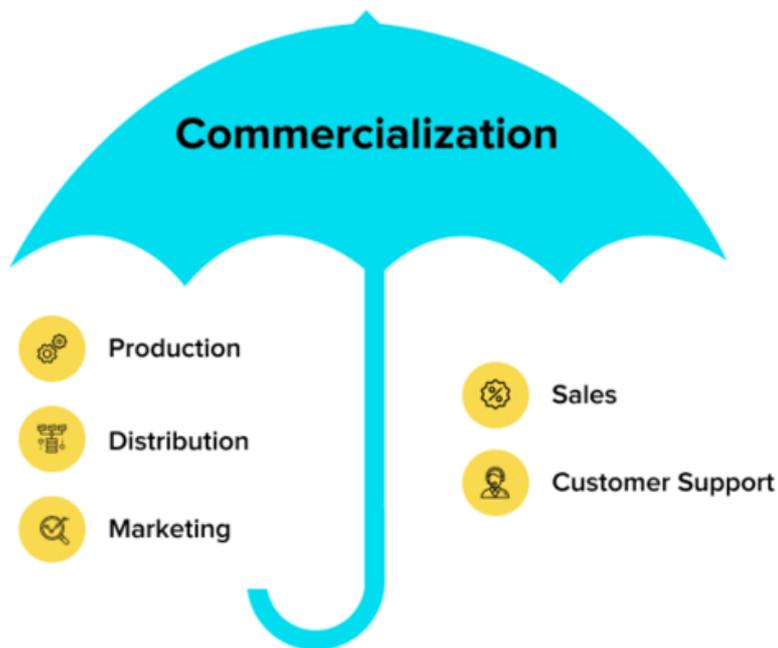


Figure: Product commercialization. Source: <https://www.netsolutions.com/insights/everything-about-new-product-development/>

Post-launch review

To optimise the new product development process, you should reconsider the steps trying to focus on milestones, barriers you experienced and what made you overcome them. Understanding the efficiency factors of launching a novelty in your company can make future attempts easier.

Testing prototypes of physical products



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Testing and prototyping websites and apps

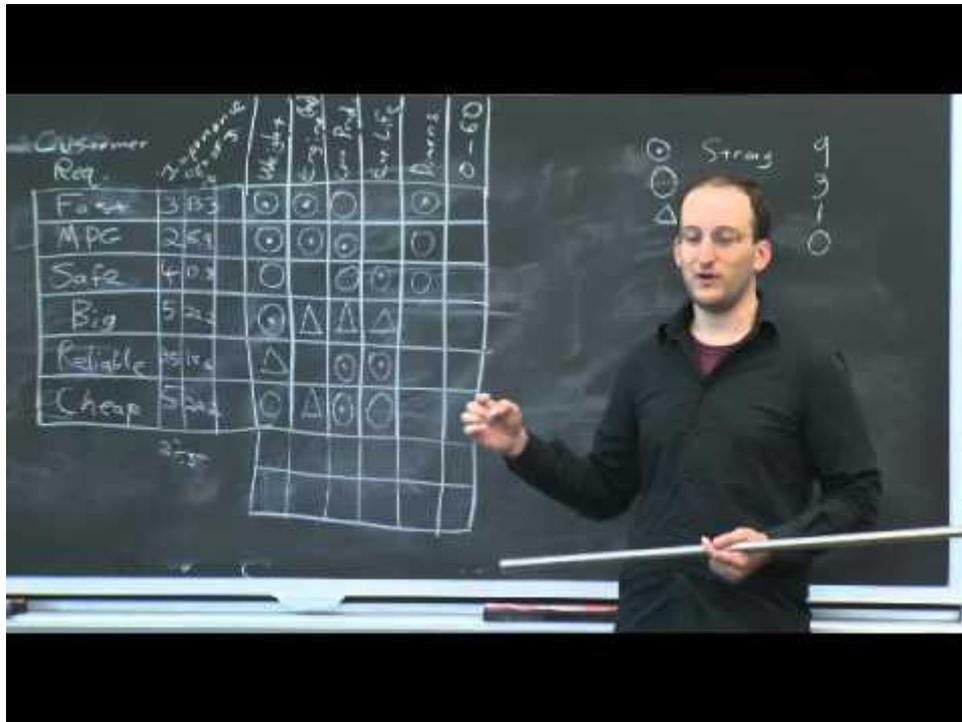
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“House of Quality”

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Test Marketing - Test!

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Launching Your Product: Here's What To Do Before Anything Else

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Pricing strategies

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How to EFFECTIVELY Promote Your Business in 2020

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Exercise - Multiple Choice with Hints and Feedback

You can use this template as a guide to the simple editor markdown and OLX markup to use for multiple choice with hints and feedback problems. Edit this component to replace this template with your own assessment.

A step of a product development which is focused on the preparation of technical designs and technological documentation as well as building prototypes is called:

- Testing prototypes.
- Development and testing a product concept.
- Marketing tests.
- Ideation.

Forms and methods of international innovation marketing

Entering an international market requires strategy. It has to be preceded by a certain set of actions and involves making the following decisions:

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1. Choosing a target product/market – characteristics of a country, sector and branch must be investigated. The appropriate analysis must be performed (eg. SWOT, PESTLE, 5 forces).
2. Setting objectives and goals in the target market (they can differ from the origin market and must be adapted to new circumstances).
3. Choice of an entry mode.
4. Marketing preparation (pricing, distribution and promotion strategies).
5. Entry strategy launching.

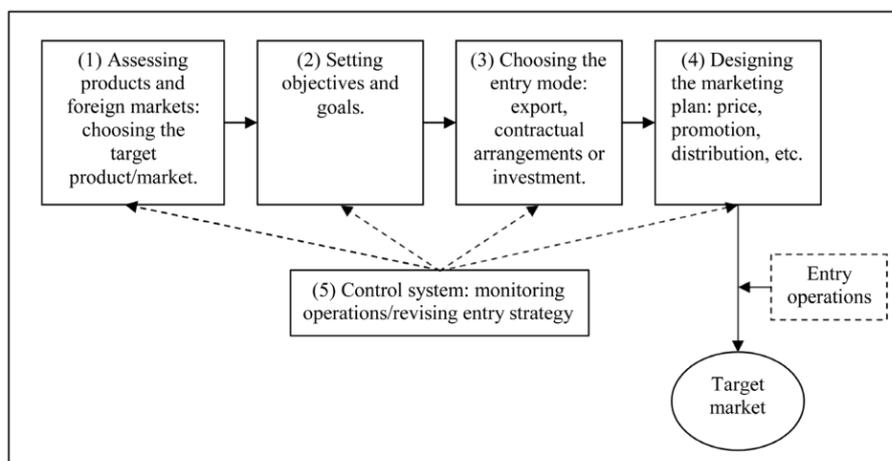


Figure: Process of entering international markets. Source: Root, F.R. (1994) Entry Strategies for International Markets. Revised and Expanded Edition, Lexington Books, New York

There are several entry modes which a company can choose:

- Direct export;
- Indirect export;
- Licensing;
- Franchising;
- Contracting;
- Sales subsidiaries;
- Manufacturing subsidiaries;
- Joint ventures;
- Strategic alliances.

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For a better understanding of how companies can manage to internationalise their products, please, refer to: [Launching your product into new markets? Here's how.](#)

For a more practical perspective on launching products in international markets, please, refer to the following interview: [Scaling a start-up: Launching innovative products in international markets](#)

Models of entering international markets



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More about factors and models of entering international markets

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Exercise - Multiple Choice with Hints and Feedback

Choosing indirect export strategy when entering foreign markets means:

- Undertaking your own marketing and sales abroad.
- Appoint third parties (e.g. agents or distributors to represent your company and your products abroad).
- Licensing its know-how, procedures, intellectual property, use of its business model, brand etc. to another company which in return pays agreed fees and complies with certain obligations.
- Establishing foreign subsidiaries

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Project and risk management

Introduction

This part of the course provides information about project management methods, which, when combined with complementary tools, can provide the best chance of reaching successful outcomes for a wide range of innovative activities.

Project management emerged as a methodology in the 1950s as a way to control cost, schedules, and scope in a defined project more effectively than the historical methods of controlling activities using just a basic schedule and generic management techniques. The driving force for the implementation of more disciplined project management came from large defence contractors and engineering organisations that were developing and producing highly complex and costly products. Project management was proven to be effective and was widely adopted by large organisations throughout the world. The successful use of these methods in manufacturing and production was shown to provide such a competitive advantage that the discipline spread to a diversity of other organisations both from the business and academic sector.

Project management can be applied to activities regardless of the industry or discipline: science, technology, arts, adventure, etc.

Concepts

A project is an activity with a defined scope or goal, to be accomplished within a specific time frame or schedule, and with a dedicated budget.

The performance of the project is measured and actively managed. Project management is seen by some as a highly regimented activity where, if applied to more creative activities, would result in constraining them to the point that they would not succeed. However, there is a wide range of activities that may not fit the description of a project, but would benefit from the application of the project management discipline.

The project management concept can be applied to research and development (R&D). R&D is sometimes categorised as a project, and sometimes not. R&D may or may not have defined goals or outcomes (as e.g. in basic research). Nevertheless, the management of the organisation usually has some expectation of R&D outcomes and requires some accounting of the activities that are being funded. Therefore R&D activities also could be defined using the standard project management categories. R&D activities will be expected to have an objective to increase knowledge in a particular

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area, perhaps be required to develop a sample called a prototype, or engage in modelling and simulation, for example. The objective is that the R&D will eventually lead to something new. Regardless of the level of certainty associated with R&D goals, the application of project management, enhanced by complementary disciplines, provides a powerful toolset to manage activities outside of what is considered a traditional project such as these.

The amount of project management formality is derived through careful review of customer expectations and requirements, and analysis of risk level, scale, complexity, and scope. The formality levels include:

- Formal projects, requiring the implementation of all standard project management processes and extensive reviews to verify performance to the established plan.
- Semi Formal, which is typically less complex or less risky and yet requires a careful accounting of the progress a project makes against the plan.
- Informal, which use standard project management processes, however, without significant oversight.

Not all projects within an organisation require or benefit from the same level of formal project management discipline. The amount of project management formality is derived through careful review of customer expectations and requirements. It also can be assessed through an analysis of risk level, scale, complexity, and scope. In general and in practice, many factors go into the decision. Applying the right level of discipline to activity is an art. If the organisation has a firmly entrenched process for establishing and managing formal processes, it will be more inclined to use those established processes. If the organisation does not have any formal processes established, it will be difficult to implement full project management, even if the customer desires that level of accountability and reporting. Trade-offs need to be made between the implementation of project management processes and the effort it would take to implement the processes within the organisation.

Models and procedures

Traditional project management uses a methodical, sequential approach to reach a defined target or outcome. It requires:

- An initiation phase to develop the scope, identify participants, and define the objectives or outcomes;
- The formalisation of a plan, including specified requirements, budget, and schedule;
- Active management of the plan, including change management, risk management, performance measurements, and communications.

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Traditional project management, often referred to as the waterfall method (based on the resemblance to the flow of a waterfall), requires that various processes be followed and activities are completed in sequence. Among these is the institutionalisation of a plan describing what activities will take place, by whom, over what time, and within the cost and technical parameters.

Documentation and communication is required during and after the activities are complete. The discipline includes ways to measure performance and quality against the established documentation. The cornerstone of how the discipline works is in establishing a baseline description of what will be done, when and for how much, and then managing against that baseline. A baseline is a final version of the project that includes the scope, requirements, outcomes, resource-loaded schedule, budget, and all other project-related documentation. It is the version that everyone involved in the project has agreed to and supports. And, it is the version against which change, quality, and performance are measured. Each of these activities, when taken together, provide a framework or structure that helps put form to an idea and offer visibility into the progress made to implement the idea.

Scope

Developing a scope statement is a critical first step in the process of developing a plan. The scope defines in plain language "what" will be done and who the customers or beneficiaries are. The scope does not include detailed requirements, which are captured in a later stage, but is the high-level summary statement of what is needed. Further fidelity can be obtained by defining goals and objectives. Goals are high-level statements that would further define what the project is designed to achieve. Objectives further define specific actions, or trajectories, that the project will follow to achieve the goals, written in clear language, which makes it easy to measure performance. Scope, goals, and objectives should be clearly aligned so that it is obvious that by achieving an objective it will lead to achieving the goal, and by achieving the goal, the scope will have been met.

Deliverables/Outcomes

It is imperative to define as clearly as possible what the expected outcomes and/or the product, service, or process change will be once the requirements are fulfilled. The final deliverables or outcomes will be compared with the established project plan to confirm that performance has been achieved as expected, and goals have been met. This can be a bulleted list of functionality, hardware or software, a defined process, or some other outcome that will be delivered by the project. The list does not include project activities, but instead focuses on the results of the project activities.

Requirements

Once the scope and deliverables are understood and documented, then requirements are defined. A requirement describes exactly what is needed. It can include a feature or a process. For example, if the scope is to build a box, the requirements define what the box will be used for, what the dimensions

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must be, if it needs to open and close, and other such important features and functions that it must perform. Typically, a priority order is assigned to these requirements unless money is no object. The highest priority items are the "must-haves". The lower priority items are desired options, which, depending on cost and schedule, would be included.

Approach

The approach outlines in clear language the specific actions that will be taken to develop and implement the requirements and achieve the overall project outcomes. Approach options may include, for example, doing the work within the existing resources, outsourcing, or purchasing. It is often the least costly or most timely solutions that are implemented as an approach. For R&D, this becomes a particularly important question and hinges on whether the project is aiming for an incremental improvement in an existing capability or a paradigm-shifting new capability. A production project may use a collection of formalised processes to track progress on activities that are low risk and usually well understood, whereas an R&D project may use informal processes, which focus on a series of high-risk experiments.

Organisation

A project managed with traditional methods typically has an experienced and knowledgeable project manager as the leader. Often organisations look for certifications as a way to assure the project manager is adequately prepared to lead the project. Different skills and talents are needed throughout the process: proposing for a new project, implementing a project, and then moving the project to an operations state. The proposal phase of a project often requires the strong presence of a technical or scientific specialist working in collaboration with an experienced and knowledgeable project manager. Occasionally, the technical or scientific leader has both the experience and knowledge of a project manager, but it is typical that there are individuals with each of these skill sets working on the proposal. The project manager is responsible for ensuring that the proposal is inclusive of the project management methods necessary to successfully perform the outcomes outlined in the proposal.

Once the proposal has been funded (or sources for its funding are available) and the project is ready to start, the project manager is responsible for the implementation of the process discipline necessary for the successful completion of the project. A technical or scientific specialist may or may not be involved depending on the need of the project and, if needed, may or may not be the same individual who was involved during the proposal development phase. In R&D projects, the technical or scientific specialist or subject matter expert often plays a key role in the project. However, it is not generally optimal to have that person focused on process and management activities. It is far better and increases the probability that the project will reach successful outcomes if the specialist is provided with the opportunity to focus on his or her area of expertise and the project manager handles the day-to-day management of the project. The organisational alignment of these key players, plus other team members who will be involved in the project, needs to be established.

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Schedule

A schedule is one of the most important elements of the project management process. It is the document that outlines all major tasks and the assigned start and end dates. Each activity in a schedule has an expected date for starting and finishing. Total time for the project can be calculated by outlining the steps that must be done, in order and subordinated correctly, with estimates for the time it will take to complete each activity. Scheduling is not an exact science. The closest one can come to developing an accurate schedule is by using scheduling information that has been proved on a previous project of the exact same type, with the exact same parameters. Even with that, there are no guarantees because subtle changes in input can have a ripple effect that will dramatically change the overall time to completion. Projects that have elements of R&D can have the greatest uncertainty. Operations and production activities can have the most certainty, although they are not 100% predictable.

Budget

A budget is an allocation of funds to a particular activity over a certain period of time. Typically, the tasks in a schedule will be resource-loaded, and the funds required for each task are calculated and compared to the amount of funding that is available. The more historical data that are available in making the estimates of schedule and cost, the better the schedule and budget estimate will be. A budget also can be used as a top-down constraint to scope a project by constraining the tasks within the project's work packages. If the overall funding that is available is less than what would fund all tasks in the project, the scope must be reduced, and the associated tasks in the schedule reduced or eliminated.

Risk Management

Risk management will be further described in other units, but as it is a crucial element of project management activities, it will be introduced here.

All projects are vulnerable to risks that jeopardise their ability to achieve the project objectives or outcomes. A risk is defined as something that might occur, and, if it did occur, would cause an impact on the budget, schedule, or scope performance. The impact is typically negative, but can sometimes be a positive in the sense that an opportunity can emerge from the risk that allows optimisation, such as an unforeseen move forward in the schedule, a lower cost solution, or a technical advancement. Risk management is the process of identifying and prioritising these risks so that the organisation's management can focus its resources toward eliminating risks that are both high impact and highly likely to occur.

Performance Measurement

A project has three major elements that are measured and controlled:

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- The schedule,
- The cost (budget),
- The scope.

Once a plan is fully developed, it becomes the document of authority or baseline against which the actions over time in each of these constraints are measured.

The examples of parameters for measuring performance are listed below:

- Is the amount being charged for the work during the time period being reviewed consistent with the budget? If not, is less spending or more spending occurring?
- Is the time being charged to the work for the time period being reviewed consistent with the baseline schedule? If not, are fewer labour hours being charged or more?
- Are the technical expectations being met? Or, for R&D, is an outcome of an experiment now known? If not, are the technical expectations less than expected or overperforming (measures of effectiveness, performance overall, and upper/lower limits within tolerances)?
- Are the experiments not progressing as planned?
- Are the process quality expectations being met? (This question would be used when a process, not technical performance, is the project deliverable, e.g., on a project that is modifying a service.)
- Are the risks being retired at an acceptable rate? And, are new risks being appropriately captured, assessed, and prioritised?

The only way these measures can be assessed correctly is if a baseline project plan is in place, and tangible evidence of progress is reported. The point of having a baseline is not to constrain performance, but to manage change in a way that is auditable and explainable. The best way to do this is through the use of change control. The level of change control formality can vary significantly. What is needed is a process for which a change can be proposed, impacts assessed, and then either accepted, deferred, or rejected into the project. This process can be as simple as filling out a form and reviewing it with all the project stakeholders.

Measuring performance is to provide insight into how a project is progressing against what was expected, understanding what could cause negative impacts to the project, and to use that information to make course corrections that ultimately will lead to a positive outcome. There are many different ways to monitor and report on this progress; both qualitative and quantitative approaches can be used.

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Communications

Although communications have been listed last, it is probably the most important activity that a project manager is responsible for performing. It is essential throughout the project to convey progress, identify risk and mitigation or minimise the damage from the risk, and to manage change in a way that does not impact the final desired outcomes. Methods for communications differ by organisation, by project formality, and by customer (or project's beneficiaries) requirements. There is no single way to communicate across all the potentially different scenarios. However, the best way to communicate is the way that gets the message across to the stakeholders as efficiently and effectively as possible.

In a formal reporting scheme, there may be specifically defined project reviews (such as design, production, or test reviews), daily meetings, monthly reports, quarterly reports, or other well-established activities with predetermined guidelines that convey progress to the stakeholders. On the other end of the spectrum are informal reporting activities that may include simple discussions over e-mail or on forums, professional debate, or through discussion groups. In the formal setting, records are kept and can be used in a comparative way over time to convey progress toward a goal or goals. In the informal setting, it becomes more difficult to defend the progress that has been made if it is not documented.

Standards

In previous units, a general methodology for project management was presented. However, there are many methodologies that can be followed in order to manage a project. They are called standards.

The project management standards are extensive documents covering in detail different aspects of project management and related activities.

There are different organisations that develop such standards and in most of the cases, they are not for free, but you can get familiar with their assumptions by visiting the following websites.

Organisation	Standard	Type
Project Management Institute (PMI)	PMBOK® (Project Management Body of Knowledge) Guide	Paid
AXELOS	Prince2 (Projects In Controlled Environments)	Paid



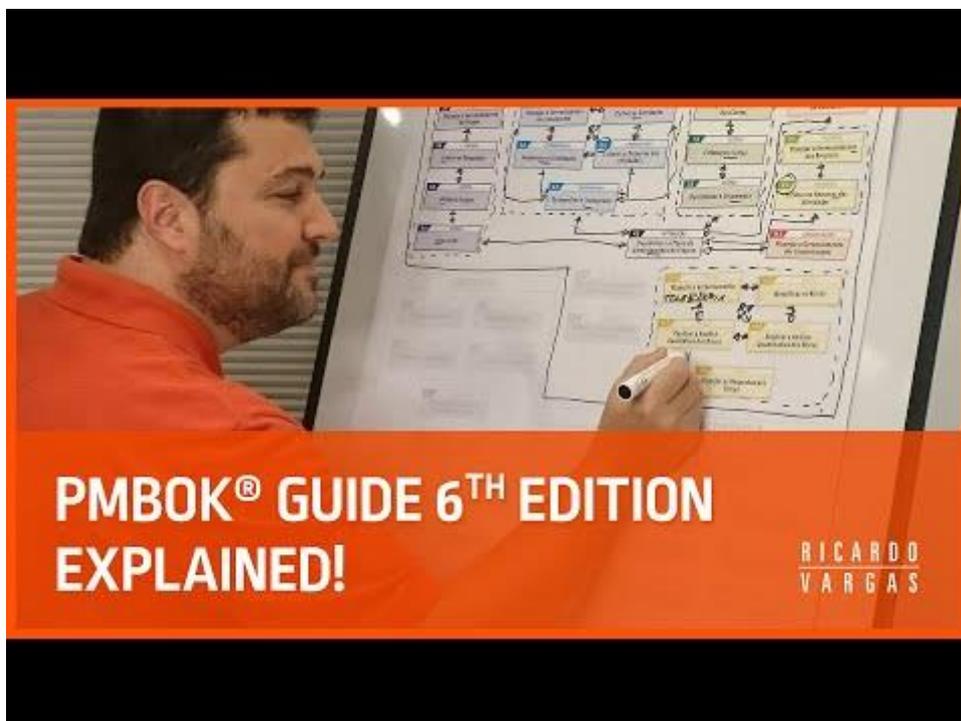
International Project Management Association (IPMA)	IPMA Standard	Free
European Commission	Project Cycle Management (PCM)	Free

Figure: Project Management Standards. Source: Own development

These are just a few examples of project management methodologies (with the first two being the most popular around the world). You can search the Internet on your own to get familiar with other standards.

In order to better understand the nature of a project management standard, please watch the film about PMBOK Guide.

PMBOK Guide



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Exercise - Multiple Choice with Hints and Feedback

The video about PMBOK refers to “Manage Stakeholder Engagement” as one of key processes of which part of the methodology?

- Initiating the project.
- Planning of the project.
- Execution of the project.
- Monitoring and controlling of the project.

Selected tools

In this part of the course, we will focus on selected tools used in project management:

- 7-s framework;
- Work-breakdown structure (WBS);
- Critical path method (CPM);
- Gantt chart.

These are just the most popular, however a few of the possible tools that can be used. Feel free to search the material on project management you can find on the internet to get familiar with other tools.

7-s framework

The 7-s framework provides a comprehensive set of issues that needs to be considered for successful project management.

The 7-s of project management

Element	Description
Strategy	The high-level requirements of the project and the means to achieve them
Structure	The organisational arrangement that will be used to carry out the project
Systems	The methods for work to be designed, monitored and controlled



Staff	The selection, recruitment, management and leadership of those working on the project
Skills	The managerial and technical tools available to the project manager and the staff, and how these are developed
Style/culture	The underlying way of working and inter-relating within the work team or organisation
Stakeholders	Individuals and groups with an interest in the project process or outcome

<https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework>

For a detailed explanation of the 7-s framework, please visit The McKinsey website for an [interactive demonstration](#).

WBS

The work-breakdown structure (WBS) is a result/deliverable-oriented breakdown of a project into smaller components. A work breakdown structure is a key project tool that organises the team's work into manageable activities/sections. Learn more about WBS from the film.

What is a WBS?



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CPM

The critical path method (CPM) is a project tool which helps to find the important deadlines and deliver a project on time. Learn more about CPM from the film.

What is a CPM?

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Gantt chart

The Gantt chart is a tool that allows to plan and visualise project's timeline/schedule. Learn more about Gantt chart from the film.

What is a Gantt chart?

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Exercise - Multiple Choice with Hints and Feedback

Which tool would you use to plan the project and its results/deliverables in detail in order to assign them to the team involved?

- The critical path method (CPM).
- The work-breakdown structure (WBS).
- The Gantt chart.
- 7-s framework.

Risk Management Process and Plan

Introduction to risk management

Risk exists in every project, whether recognised or not. Identifying and measuring these risks is a critical step toward managing them. The evaluation of risk includes both qualitative and quantitative

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measures as well as probabilities of occurrence. Qualitative measures identify the risk factors and types of risks, while quantitative measures characterise the magnitude of the risk. Such measures can be used to develop input to schedule and cost risk assessments, which help the project manager to appropriately deal with the project risks.

Risk management involves the processes and tools that are used to:

- Identify;
- Assess;
- Mitigate;
- Monitor;
- Control.

Anytime there is a planned change, there is a risk. Planned change includes activities such as when a new idea is implemented, a new product is developed, or a revised service is put in place.

Risk is typically described as potential events that would impact a project (its planned budget, schedule, or scope).

The key to managing risk is to make conscious decisions on paths to be taken. Risk management cannot be seen as optional or separate from project management. Where project management attempts to increase the overall probability of a project's successful outcome, project risk management provides structure to identify, assess, and control the environment that is not part of the original plan and to balance and minimise the allocation of resources that are available for risk mitigation throughout the project.

Risk management process

Risk mitigation is the action of methodically reducing the exposure to a risk and/or the reduction of the probability that the risk will occur. In order for project management to be effective, the environment that the project exists within and the risks and opportunities that emerge from that environment must be managed in tandem. These two processes are linked. If the external forces are not identified and addressed, unforeseen requirements will affect the parameters of the project, or opportunities will go unrealised. If the risk is mitigated effectively at the project level, it should appear as if it is running smoothly and being properly controlled.

The individuals responsible for administering the risk management processes are the project manager and the stakeholders, all of whom are considered part of the project risk team. Project risks usually

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affect the project's ultimate success, so anyone with a vested interest in the project should be involved in risk management, including functional departments or divisions that interact and provide services to the project. Active participation is important.

On large and complex projects, there is often a risk manager who oversees the ongoing process of identifying risks, assessing impacts and probabilities with the appropriate stakeholders, ensuring risks are appropriately mitigated, controlled, and retired. The risk management activities for projects are ongoing throughout the project life cycle.

The following risk management processes are essential at the project level:

- A collection mechanism for capturing, documenting, and completing an initial assessment of risk items from all stakeholders.
- A process to assess the risk tolerance, or degree of uncertainty, that stakeholders will accept - these directly translate into risk responses.
- A process for prioritisation, evaluation of alternatives, decision making, and implementation.
- Processes for obtaining approvals, monitoring progress, and holding individuals accountable for risk management activities.

A review of the risks currently being managed and a call for new risks should be done periodically, either at key milestones or other meaningful times. However, there should be a way for stakeholders to bring forward new risks at any time. There also must be a process for incorporating new risks and retiring risks that are no longer valid. The figure below provides an example of the forces at work on a project and the various risks and opportunities that can result.

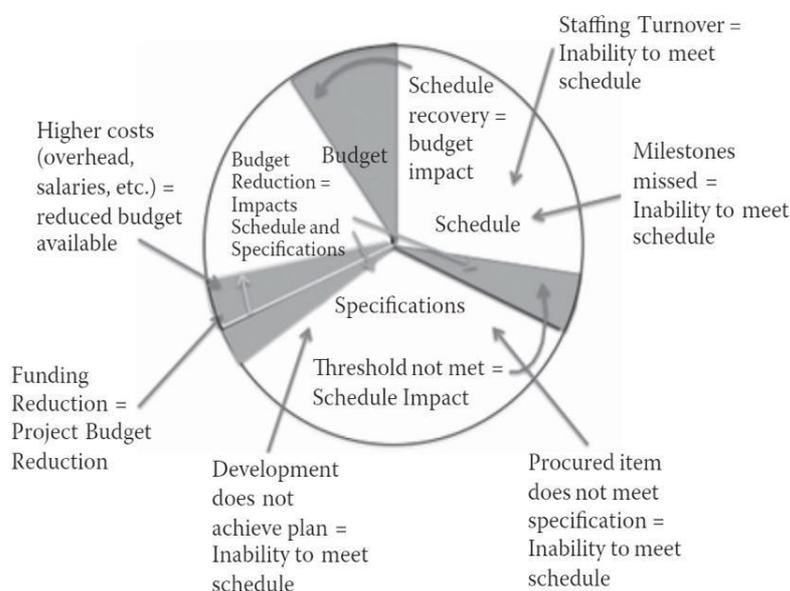


Figure: Example of project impacts. Wingate, L. M. (2014). Project management for research and development: guiding innovation for positive R&D outcomes. CRC Press, p. 310.

The budget, schedule, and specifications baseline will be under pressure from the moment the project is baselined, both from external and internal sources. If a specification is not met, it could conceivably affect the performance of the schedule, especially if a redesign is required. If staff has to be hired to make up the difference, a consulting contract has to be negotiated, a product has to be purchased, or some other activity needs to occur to resolve the specification deficit, which could affect the budget as well. On the other hand, lack of meeting a specification may cause the project to reassess the specification and potentially choose an alternative that surpasses the original specification. There are both risks and opportunities to be addressed in assessing the effects of impacts. The presented figure also shows that other external factors, such as reduced funding available for the project or staffing issues, such as an organisation-wide strike, can negatively impact the project. These are just a few of an almost infinite number of risks that could affect a project.

Risk management plan

The risk management plan is a complementary document to the project management plan. It is a vital document used to ensure that risk is adequately addressed and managed on a project. Small, simple projects will need a basic risk management plan, while large and highly complex projects will require a formal, more extensive risk management plan.

Standard contents of a risk management plan include:

- Procedures and processes;

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- Roles and responsibilities;
- Methods for identifying risks;
- Methods for assessing risk and performing risk analysis;
- Qualitative;
- Quantitative;
- Methods for response and mitigation;
- Methods for monitoring and controlling change to the risk register;
- Method for managing draws on contingency and management reserves.

Regardless of the size and complexity of the project, it is important to have a plan in place that describes the risk strategy and the risk management processes for the project and also provides templates and guidelines for use. A risk communications plan is generally included that outlines how risk communications will be accomplished over the life cycle of the project. Standard contents of a risk communications plan include the what, when, where, how, and why information that will be communicated.

The project manager uses the risk management plan to actively manage the project throughout its life cycle. Active management refers to the act of reviewing project and risk activity on an ongoing, repetitive basis, and to make thoughtful adjustments in an effort to optimise project outcomes.

Although creating these plans is useful in assessing a snapshot view of risks and opportunities, for them to be instrumental in ensuring positive outcomes, these plans must be used and updated to manage the project through its duration.

Once the risk processes and risk management plan are in place, then a risk register can be compiled typically using a standard spreadsheet. Each risk is given a unique identifier (a number that is used only for that risk), ideally linked to the work breakdown structure (WBS). A unique identifier makes it easier to track activities associated with that risk. As many risks as possible should be captured in the risk register at the beginning of a project, and then risk items are added and subtracted throughout the project as appropriate.

The most important thing to remember while developing a risk register is to use an appropriate one – not too complex (that would be difficult to implement and update) or too simple (that would cause the probability of improper risk management of the project).



Please search the internet for "risk register template" or visit <https://www.smartsheet.com/risk-register-templates> for examples of free, downloadable files, you can use in your projects. You can use these templates to create your own, which is fitted to your or your project's unique requirements.

Risks captured in the risk register include potential impacts to the budget, the schedule, or scope. Cost risk, or the risk of exceeding the available budget, emerges when more staff, materials, or services are needed than were planned for the project. If more money is needed than has been planned, cost risk will be realised. Schedule risk occurs when scheduled milestones may be missed. Schedule risk can be addressed through a float in the schedule, and any time technical accomplishments will not meet specifications can lead to risk too. In addition to risk from each area of project management, there is an interrelationship between the three elements of cost, schedule, and technical. When risk is identified in one area, e. g., technical, it may add risk for other areas of the project, such as the schedule. For example, the need for more resources goes up when the schedule is slipping, and recovery includes either hiring additional staff or outsourcing. They also can go up when specifications are not being met and more time is needed to develop a new solution.

Risk assessment and mitigation

Risk assessment

Once a full set of risks has been identified and verified, the next step in the process is to qualitatively assess the risks. Qualitative risk assessment involves the review of each risk to determine how much attention should be paid to resolving it and when that needs to be completed. It is done through a series of steps:

- Assess the probability of occurrence;
- Assess the impact of the occurrence;
- Calculate a composite risk index;
- Rate the risks and opportunities;
- Put the risks and opportunities in priority order;
- Identify and plan the mitigating measures.

There are different techniques that can be used to assess the risk. One of the most common methods is the risk assessment matrix, which uses two dimensions – probability/likelihood and impact/severity in order to evaluate the identified risks. Similarly to risk register, it is possible to use a simpler version and more advanced (depending on your requirements).

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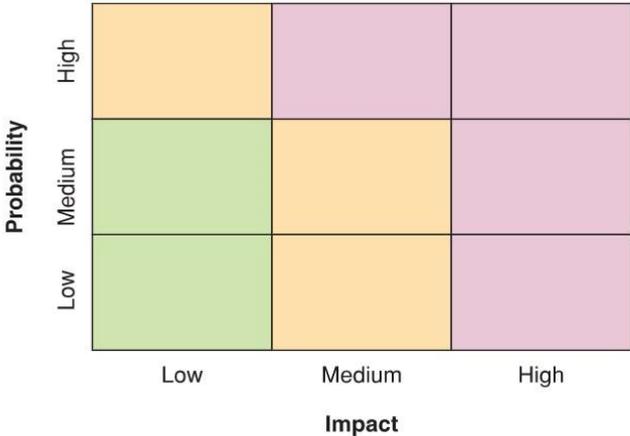


Figure: 3x3 risk assessment matrix. Source: Own elaboration

And here is an example of a 5x5 matrix.



Figure: 5x5 risk assessment matrix. Source: <https://www.smartsheet.com/>

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In simplest words, the assessment of the risk is based on the scales (1-3, 1-4, 1-5 or whatever scale you would choose) to assess the probability/likelihood of risk occurrence and its impact/severity for the project. The higher the result (probability/likelihood x impact/severity) the higher the risk and mitigating actions should be taken.

Risk mitigation

After the assessment of risk is completed and an agreed set of high-priority risks is identified, a mitigation plan has to be put in place.

Depending on what risk mitigation strategy is chosen: to take action, transfer/share, avoid, or retain the risk, it must be developed to adequately address the actions that will move the risk to be less impactful in the event it does occur, or to an action plan if there is an opportunity.

There are several questions that must be answered to make sound decisions on mitigation of a project's high-risk items:

- What is the appropriate risk mitigation?
 - For actively taking action to reduce the risk of pursuing the opportunity;
 - For sharing the risk (share the risk by transferring it out of the project);
 - For avoiding the risk (avoidance to eliminate or withdraw from the activity); and
 - For retention of the risk (retain the risk by accepting it and monitoring for triggers).
- What is the trigger that identifies the time to act?
- What is the date when the mitigation must be completed or realised?

In the table, you will find examples of risk mitigation strategies.

Risk mitigation strategies

Risk mitigation strategy	Description	Examples
Reduction	The project team takes action (or actions) to reduce the probability of the risk occurrence. This	<ul style="list-style-type: none"> • Increase of testing to avoid failures; • Changing suppliers to a more reliable one;

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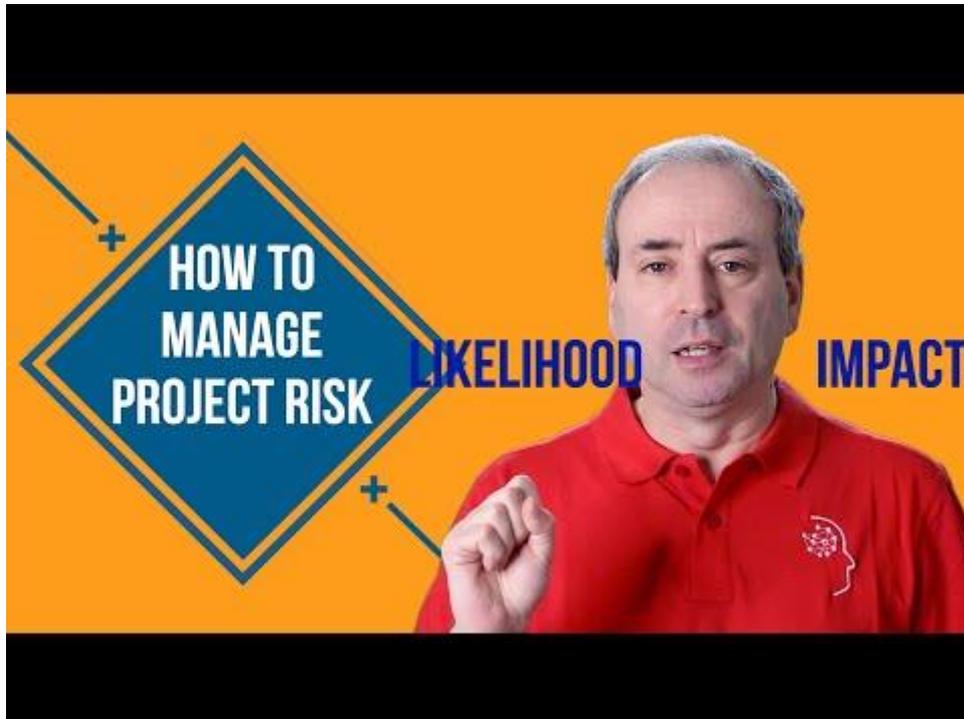


	does not change the risk or potential impact, but rather reduces the likelihood of it becoming real.	<ul style="list-style-type: none"> • Reducing process complexity.
Transfer	Risk transfer involves shifting or transferring the risk threat and impact to a third party.	<ul style="list-style-type: none"> • Purchasing insurance; • Performance bonds; • Warranties.
Avoid	Risk avoidance is a strategy where the project team takes action to remove the threat of the risk or protect from the impact.	<ul style="list-style-type: none"> • Extending the schedule; • Reducing the scope of the project; • Change in the execution strategy.
Retain	Project team acknowledges the risk and its potential impact, but decides not to take any action to prevent it. It is dealt with only if it occurs.	<ul style="list-style-type: none"> • Mitigation reserve budgets; • Management schedule float; • Event contingency.

Source: Own elaboration

In order to better understand the risk management process in projects, please watch the following video.

Project Risk Management - How to Manage Project Risk



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Exercise - Multiple Choice with Hints and Feedback

Which action can you take, in order to avoid risk in the project?

- Purchase insurance.
- Change of suppliers to a more reliable one.
- Establish a budget for the situation when the risk occurs.
- Change in the execution strategy.

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Wingate, L. M. (2014). Project management for research and development: guiding innovation for positive R&D outcomes. CRC press



Policy, legal aspects and funding

Introduction

This part of the course provides information about:

- Patenting R&D results;
- Procedures for execution of a patent;
- Funding sources for innovative projects;
- Forms, methods and tools of investment raising for innovative projects;
- Principles and methods of interaction with investors;
- Venture capital funding: its history, legal regulation, current state and prospects for its further development;
- Risks of venture capital funding, methods and selected tools for risk reduction.

Patenting R&D results

Patenting is used to protect intellectual property, being the result of research and development (R&D). In most cases, patenting refers to inventions as the results of the R&D process.

A patent is a document, issued, upon application, by a government office (or a regional office acting for several countries), which describes an invention and creates a legal situation in which the patented invention can typically only be exploited (manufactured, used, sold, imported) with the authorisation of the owner of the patent.

The regulations regarding patenting may differ in various parts of the world. The best solution, in this case, is to refer to the patenting office operating in your country for more details. If you plan to patent your inventions in other countries or regions, you should refer to the respective patenting office covering them.

In a number of countries, inventions are also protectable through registration under the name of "utility model" or "short-term patent." The requirements are somewhat less strict than for patents, in particular in respect of inventive steps, and in comparison with patents the fees are lower, and the duration of protection is shorter, but otherwise, the rights under the utility model or short-term patent are similar.

An invention must meet several criteria if it is to be eligible for patent protection:

- The invention must consist of patentable subject matter;

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- The invention must be industrially applicable (useful);
- The invention must be new (novel);
- The invention must exhibit a sufficient "inventive step" (be non-obvious);
- The disclosure of the invention in the patent application must meet specific standards.

There are certain fields of R&D results which are excluded from being patentable; this includes, e.g.:

- Discoveries of materials or substances already existing in nature;
- Scientific theories or mathematical methods;
- Plants and animals other than microorganisms, and biological processes for the production of plants and animals, other than non-biological and microbiological processes;
- Schemes, rules or methods, such as those for doing business, performing purely mental acts or playing games;
- Methods of treatment for humans or animals, or diagnostic methods practised on humans or animals (but not products for use in such methods).

We will now explain the eligibility criteria for applying for a patent.

Criteria	Explanation
Industrial Applicability (Utility)	An invention, in order to be patentable, must be of a kind which can be applied for practical purposes, not be purely theoretical. If the invention is intended to be a product or part of a product, it should be possible to make that product. And if the invention is intended to be a process or part of a process, it should be possible to carry that process out or "use" it in practice.
Novelty*	An invention is new if the prior art does not anticipate it. "Prior art" is, in general, all the knowledge that existed before the relevant filing or priority date of a patent application, whether it existed by way of written or oral disclosure. The question of what should constitute "prior art" at a given time is one which has been the subject of some debate.
Inventive Step (Non-Obviousness)*	The requirement of inventive step (also referred to as "non-obviousness") requires that the invention is not obvious to a person having ordinary

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	skill in the art. The non-obviousness principle asks whether the invention is an adequate distance beyond or above the state of the art.
Disclosure of the invention	The disclosure of the invention refers to the requirement whether or not the invention is sufficiently disclosed in the application. The application must disclose the invention in a manner sufficiently clear for the invention to be carried out by a person skilled in the art. The description should set out at least one mode for carrying out the invention claimed. This should be done in terms of examples, where appropriate, and with reference to the drawings, if any.

Table: Eligibility criteria for applying for a patent. Source: World Intellectual Property Organisation. (2004). WIPO intellectual property handbook: Policy, law and use (Vol. 489). WIPO

* It should be noted that novelty and inventive step are different criteria. Novelty exists if there is any difference between the invention and the prior art. The question, "is there an inventive step?" only arises if there is novelty. The expression "inventive step" conveys the idea that it is not enough that the claimed invention is new, that is, different from what exists in the state of the art, but that this difference must have two characteristics. Firstly, it must be "inventive", that is, the result of a creative idea, and it must be a step, that is, it must be noticeable. There must be a clearly identifiable difference between the state of the art and the claimed invention.

The issues regarding patents and patenting R&D results are very broad. In order to familiarize yourself with patenting related issues you may refer to organisations such as the World Intellectual Property Organisation (WIPO) and its [handbook on intellectual property](#).

You can also refer to another source, such as the European Patent Office and its [inventors' handbook](#).

To better understand why patenting matters, watch the below video, explaining this on the basis of pharmaceuticals.

How patents support innovation in pharmaceuticals



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Exercise - Multiple Choice with Hints and Feedback

After going through Inventors' Handbook developed by the European Patent Office mentioned above, explain why non-disclosure of the invention is so important?

- Disclosure may prevent from obtaining a patent.
- Someone may use knowledge coming from the disclosed idea for their own gain.
- Non-disclosure provides protection to the invention.

- All answers are correct.

Procedures for the execution of a patent

The patenting procedures are subject to the region, where you would like to protect your invention / intellectual property / R&D results.

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For this reason, you first have to decide whether you would like to apply for a patent on a national level (patent for a specific country) or European / international level. In this course, we will present procedures for the execution of a patent from the European perspective.

If you would like to apply for a patent on the national level (in one or selected countries), it may be better to choose the national route and submit the patent application at the respective intellectual property office in the country or countries for which you are seeking protection. Please refer to the European Patent Office website for more details on the national applications. You will also find there links to Patent Offices in all European Countries (<https://www.epo.org/applying/national.html>)

If you would like to apply for a patent on the international level, you can also refer to the European Patent Office, which acts within the Patent Cooperation Treaty (PCT). For more details visit: <https://www.epo.org/applying/international.html>

Before you start the patenting process, it is advisable to answer several questions that would help you with selecting the best patenting strategy (see further for more details).

Questions related to the patenting process

Questions	Answers
Do you really need a patent?	Would some combination of other forms of IPR protect your idea adequately? A patent is not always required to protect the invention. Other forms of intellectual property are available, which can secure your R&D results*.
Have you studied the total cost of patenting (which should include annual renewal fees in every country in which you have protection)? Is your invention likely to earn enough income to justify the cost?	Normally, you should not apply for a patent until you have thoroughly researched the commercial and financial potential of your idea.
Is the time right to apply for a patent? Do you apply for a patent early on, or wait until the invention is market-ready and more capable of quickly recouping its IPR costs?	Application starts a sequence of events which cannot be delayed. Later may be better than sooner, but circumstances will vary so you should always seek the advice of a patent attorney.



<p>Does your invention have a short product life cycle?</p>	<p>The patenting process typically takes 3-4 years. If your invention is aimed at a highly competitive market in which products are rapidly replaced or improved, your patent may be worth little by the time it is granted.</p>
<p>Who will pay to enforce your patent?</p>	<p>National IP offices do not enforce patents or monitor them for infringement. These are the responsibilities of the patent owner or a licensee. Until funds are potentially available to enforce your patent - from royalties or sales income - it may offer limited practical protection.</p>
<p>How strongly might your patent resist legal challenge?</p>	<p>You will definitely need a patent attorney's advice on the strength of your claims. This is important because the validity of patent claims is often challenged, usually by competitors who want to copy a successful product. If they succeed, you may be left with a valueless patent and an order to pay the victor's legal costs.</p>

Source: European Patent Office, The patenting process, <https://www.epo.org/learning/materials/inventors-handbook/protection/patents.html>

* For other forms of intellectual property protection, please consult <https://www.epo.org/learning/materials/inventors-handbook/protection/ipr.html>

Another good step to take before applying for the actual patent is to examine possible patenting strategies. See: <https://www.epo.org/learning/materials/inventors-handbook/protection/strategy.html>

In order to examine the patenting process in detail, we would like to refer you to the following resources developed by the European Patent Office:

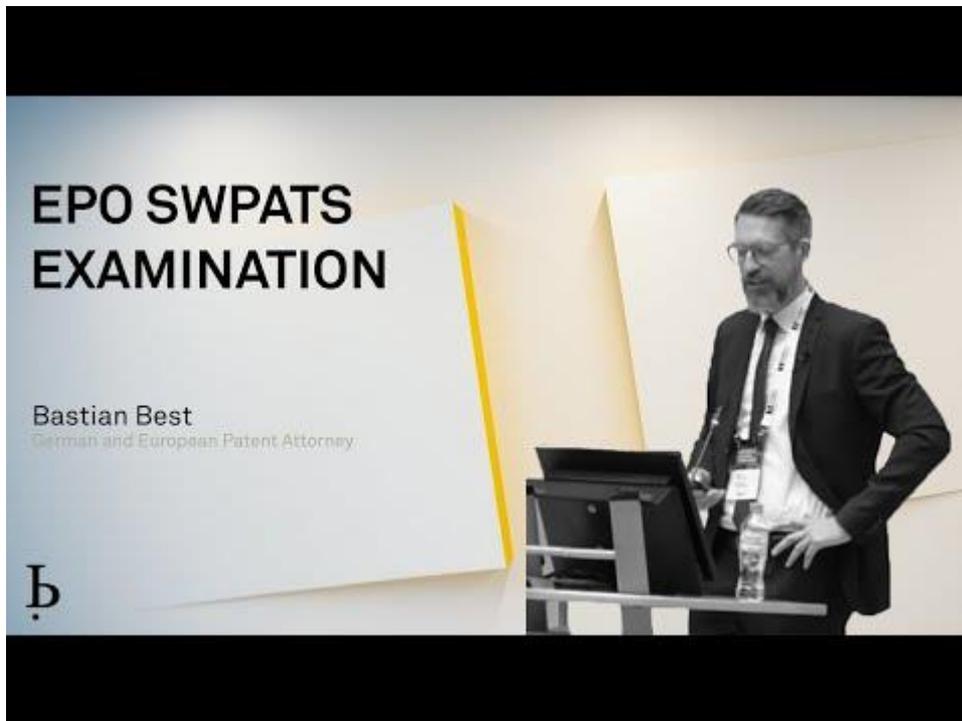
- [The patenting process;](#)
- [How to apply for a European patent;](#)
- [European Patent Guide – How to get a European patent.](#)

In order to understand better the intellectual property management and the patenting process related issues you can refer to [case studies](#) prepared by the World Intellectual Property Organisation (WIPO) and [case studies](#) prepared by the European Patent Office.

Please watch the video below, and see how the European Patent Office examines patent applications.

How the EPO examines patents

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Exercise - Multiple Choice with Hints and Feedback

Study the patenting process material developed by the European Patent Office (see above). Which of the following is NOT the part of it?

- Search.
- Signing of a non-disclosure agreement.
- Substantive examination.
- Validation.

Funding sources for innovative projects

In this section of the course, we will have a look at different sources of funding for innovative projects.

The funding needs for innovative projects are directly related to the stages of innovative project development.

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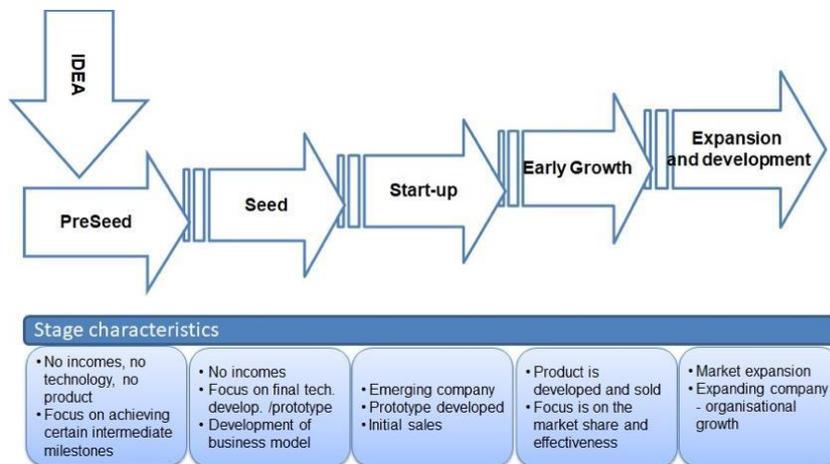


Figure: Stages of innovative project development. Source: Own development.

Depending on the development stage, there can be different sources of funding.

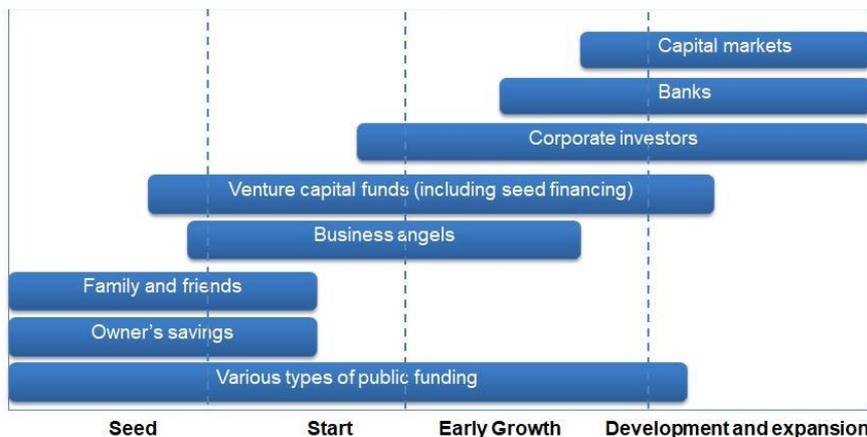


Figure: Project stages and sources of funding. Pietras, P., & Glodek, P. (2011). Finansowanie przedsięwzięć innowacyjnych w MSP. Polska Agencja Rozwoju Przedsiębiorczości.

The key question related to funding sources for your innovative project is: how much money does it need to develop?

The answer to the initial question relates to how you want to develop your project. If you want to set-up a firm, you should decide: will it grow fast (then it will need more money) or will it grow slow? The financing needs are also dependent on the industry sector that the project falls into (local niche – smaller funding needs or global entry – much higher funding needs).

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In the next units, we will look at different, selected sources of funding.

Debt and equity financing

We will now go through selected forms and methods of financing of innovative projects.

In many cases, the financing options vary between debt and equity financing. Before we proceed with details, look at the general comparison of debt and equity financing.

General comparison of debt and equity financing.

Debt financing	Equity financing
Needs to be repaid to the lender	Does not need to be repaid – stays with the company
The cost of the debt is mainly related to interest	Different types of investors available – more flexibility
Banks as the main source of debt	Part of the ownership of the company is transferred to an external investor

Source: Own development

Debt financing refers to cash borrowed from a lender (e.g. bank) at an agreed rate of interest and with a predetermined maturity date. In return for lending the money, the bank becomes a creditor and receives a promise that the principal and interest on the debt will be repaid (and sometimes other commissions). The principal must be paid back in full by the maturity date, but it is common to introduce periodic repayments of the principal as part of the loan arrangement. Banks are one of the most important sources of debt financing for innovative projects and companies that originated from them. Loans (or other types of debt financing) may, however, be difficult to obtain for innovative start-up companies, as they:

- Need to provide formal documentation to the bank – credit-worthiness analysis;
- Need to provide collateral.

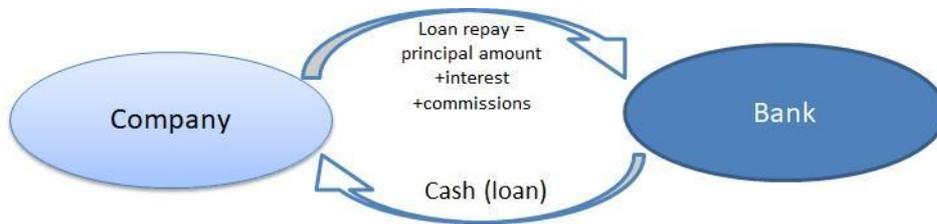


Figure: Debt financing - overall characteristics. Source: Own development.

Equity financing refers to cash paid into the project by investors (e.g. business angel or venture capital fund). The business (based on the innovative project) founder is usually one of these investors, but not necessarily the only one. Investors receive a share of the company, in effect, a percentage of it proportional to the total investment paid in. Investors may provide investment at a different stage of business development (start-up vs already active business; a new joint venture with existing business; etc.). Investors may deliver cash to a company as an investment opportunity, however, they do not receive their money back in the same form. The investment return may be related with:

- Shares/stock appreciation, or;
- Other profits, such as the yield of dividends which the business may (but need not) pay to the investor.

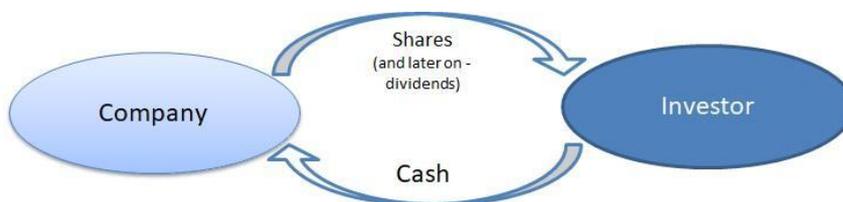


Figure: Equity financing - overall characteristics. Source: Own development.

For some early-stage company owners, the most challenging feature of equity financing is the need to share ownership.

Some of the arguments regarding sharing business ownership with an external investor are presented in the table below.

Advantages	Disadvantages
Much higher risk acceptance than banks	It is a costly solution – a part of the future profits will go to investors

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Provides a significant amount of capital for investments with some level of risk	A part of the business ownership goes to an outside party, which includes managerial, legal and psychological issues
Add experience and managerial knowledge to young businesses	
No need to repay the investment – positive long term effect on financial liquidity	
It allows the owner to get further financing for developing the business (second/third round)	
Focus on company development	
It allows the owner to keep confidential information secret	

Table: Advantages and disadvantages of equity financing. Source: Own development.

See some more examples of differences between debt and equity financing in the video below.

Debt vs. Equity Financing



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Exercise - Multiple Choice with Hints and Feedback

Which financing method is not a suitable option if the investor doesn't want to lose the ownership of the company?

- Equity financing.
- Debt financing.
- There is no difference between debt and equity financing.
- None of the above answers are correct.

Business angels and venture capital funds

After the investment is made – the investor becomes a co-owner of the company.

A range of potential equity investors may be considered by innovative project managers e.g.:

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- Business angels;
- Venture capital funds.

Business angels (BA) are private, informal investors who invest part of their financial resources in new, promising, innovative projects. They invest private funds (usually the amount of 200,000 € to approx. 2 million). Investments are usually targeted at the early stages of business life. They often do not intend to publicly disclose their investment activities. In many cases BAs are people with professional experience related to business - entrepreneurs (various industries), managers, lawyers, etc. They have the potential to advise on building a business and are oriented to the success of the venture. One of the easiest ways to contact a BA is through business angel networks. At European level, information about local/regional BAs networks is provided by EBAN (European Business Angel Network, <http://www.eban.org/>). Have a look at the website to get more details on business angels.

Venture capital (VC) funds are private equity investment vehicles that seek to invest in firms that have high-risk/high-return profiles, based on a company's size, assets, and stage of product development. Venture capital funds differ from other investment funds in that they focus on a specific type of early-stage investment. All firms that receive venture capital investments have high-growth potential, are risky and have a long investment horizon. Venture capital funds take a more active role in their investments by providing guidance and often holding a board seat. Venture capital funds have portfolio returns that resemble a barbell approach to investing. Many VC funds make small investments on a wide variety of young companies, assuming that at least some of them will achieve high growth and reward the fund with a comparatively large payout at the end. An effective way to get information on VC is to contact local innovation support organisations (e.g. technology transfer centres). At European level, information about national/regional VC funds is provided by Invest Europe (<http://www.investeurope.eu>). Have a look at the website to get more details on venture capital.

When looking for an equity investor, there are some important questions to be answered to check if the innovative project is aligned with the potential investor characteristics, such as:

- What is the sectoral focus of the investor?
- What is the preferred investment size of the investor?
- Is any other assistance possible from the investor's side? What is the investor's experience in assistance provision for start-ups?
- What about a possible second/third round of investment? What is the investment capacity of the investor?
- What is the existing portfolio of the investor? Is there a sectoral match?



We will now look at the advantages and the disadvantages of the two main equity investors types (BAs vs VC).

Equity investors expect a high return on investment and may accept high investment risk. They usually expect high growth of the company; profits are a little less important at the beginning. The usual return expectations (of the invested capital) depending on the type of investor are as follows:

- Business angels: 60-100%;
- Seed Fund (very early stage VC): 30-80%;
- Venture Capital Fund: 30-50%;
- Stock market: 12-20%;
- Bank loan: depending on actual rates.

At an early stage of innovative business development, different financing providers have other preferences regarding their investments. They are marked with colours (similarly to traffic lights; red=stop; green=go) to indicate which options are better than the others for an early stage of innovative business development.

Advantages and disadvantages of equity financing:

Type of investor	Characteristics and investor's preferences
Bank	<ul style="list-style-type: none"> • Institutional investor; • Invest external capital; • Aim for a low rate of return and low risk; • Collateral is required.
Family, friends and founders	<ul style="list-style-type: none"> • Individual investor; • Invest own capital; • Low profit requirements; • They invest in their friend's idea – personal relationships at stake;

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	<ul style="list-style-type: none"> ● Passive investor – one investment usually.
Business Angels	<ul style="list-style-type: none"> ● Individual investor; ● Invest own capital; ● Business and (sometimes) sectoral experience; ● Active investor – usually a broad portfolio of investments; ● Invest in a specific entrepreneur (personal choice).
Venture capital funds and seed funds	<ul style="list-style-type: none"> ● Institutional investor; ● Invest external capital; ● Active investor – a broad portfolio of investments; ● Invests in specific businesses (aligned with funds' strategy).
Capital markets	<ul style="list-style-type: none"> ● Start-up companies are too small and too risky to enter regular capital markets.
"Parallel" capital markets	<ul style="list-style-type: none"> ● E.g.: First North (Nasdaq), AIM (London Stock Exchange), Alternext (Euronext), NewConnect (Warsaw Stock Exchange); ● An alternative route for small- and mid-sized companies; ● Fewer formal obligations and much lower capital requirements; ● Provide capital but they also greatly increase the credibility and the visibility of the business.

Source: Own development.

Go through the following material to find case studies of investments made by business angels and venture capital funds. See what kind of projects were funded and why? What was their potential and how the projects developed?

- Compendium of European Co-Investment Funds with Business Angels by European Business Angel Network <http://www.eban.org/coinvestment-compendium-2018>

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- East Midlands Business Angels Ltd <http://www.em-ba.co.uk/case-studies/>
- The British Private Equity & Venture Capital Association (BVCA) <https://www.bvca.co.uk/Media-and-publications/Case-Studies>

For a clearer picture see the video below explaining differences between the two presented financing methods.

Angel Investors VS Venture Capitalists



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Principles and methods of interaction with investors

We will now look at some of the principles of interaction with investors. But, what does this relationship look like at the beginning?

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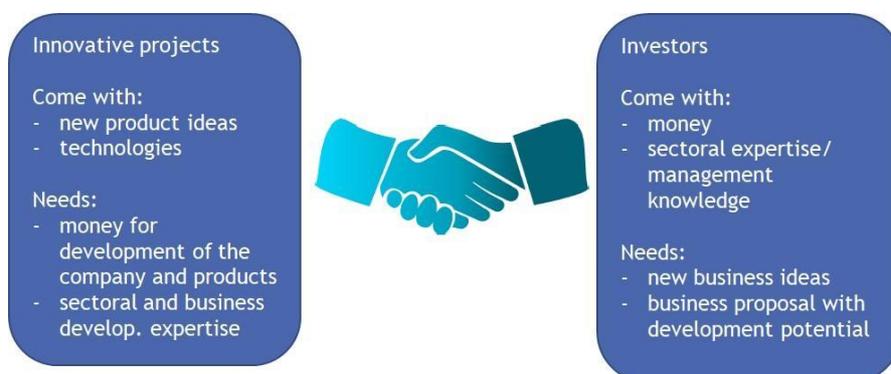


Figure: Innovative projects vs investors. Source: Own development.

Investors, apart from the return rate from the investment, are looking for:

- Business projects with high growth perspective (new product or technology is just a way to achieve business growth, it is not the essence of the project);
- Interesting people (good, dynamic, motivated teams).

In order to attract investors to your innovative project, The key is to show the preparation of the business assumptions, which builds credibility as a future manager of the growing business. Some of the basic documents for potential investors upon which they assess the innovative project are business plans, executive summaries, presentations. So, they should be well prepared (see module "Commercialization of innovative projects" for guidance on business plan development).

Having developed a business plan, it can be a foundation for the executive summary or innovative project presentation. The executive summary is a short version of a business plan; however, both documents must be consistent. Some investors prefer to receive an executive summary first. This is because of investor's time-saving preference.

For that reason, the executive summary must be interesting enough to encourage the investor to invest more time to read longer documents. It can be said that the executive summary is the first step towards a potential meeting or presentation etc.

The executive summary should cover a brief description of the project, which is required at the starting phase of a cooperation with a potential investor, to build up investor interest. It should focus on the most important aspects of the innovative project (because of its short form – not longer than 2 pages). The executive summary is sometimes referred to as the "elevator speech/pitch", so a short description of the innovative project that explains its concept in a way such that any listener can understand it in a short period of time.

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The presentation of the innovative project that can be based on the executive summary (or some elements of the business plan) is usually delivered during the meeting with the investor. In some cases, it may be used in the correspondence, as a supplementary document. The presentation should always be tailored to meet the formula of the meeting. The presentation, depending on the time available, should not be longer than 5 to 20 minutes. In comparison to the executive summary, it can highlight financial plans and financial needs, as topics of special importance. It's worth preparing the presentation in such a way that the discussion around it is performed according to question and answer strategy (where any potential question from the investors should be addressed by the presenters).

In detail, either the executive summary or the presentation, should be prepared using specific requirements in order to highlight the key elements of the project:

1. Present the problem (the project addresses) and the solution;
2. Identify the opportunity (e.g. market size, growth opportunities, etc.);
3. Present the competitive advantage of the innovative project;
4. Present the business model;
5. Introduce the team that stands behind the innovative project;
6. Present some financial indicators supporting the above.

The above is not the only approach. Interesting and informative executive summaries and presentations of the innovative project may be supported by a structured approach, providing answers for the following questions, which help to highlight the key features of the innovative project.

- What are the products, services, or processes that could be developed from the innovative project?
- What are the benefits of the innovative project sought by potential customers? Why?
- What is the estimated size of the potential markets by the number of units purchased multiplied by average selling price over the next three years? A "best estimate" is sufficient at this point since you are simply trying to establish an order of magnitude number for possible revenues.
- What is the level of interest expressed by the potential customers or users? Excited or not?
- What are the competing technologies/products used today to address the customers' needs?
- Who uses or supplies the customers' solutions today? These may be potential licensees for your innovative project.

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- What is the demonstrable and sustainable advantage of your technology over competitive alternatives currently in the marketplace? Estimate quantitatively how much "better, faster, or cheaper" is your technology solution than competitive solutions.
- Are there any barriers to market entry? If so, what are the barriers and how might you breach them?
- Any other technology or marketing challenges you found during the interviews, such as compatibility with current organisation processes and procedures.

Venture capital investment can be seen as a process. We will now use an example of such a process to summarise the presented content.

1. Search for and contact with the potential investor.
2. Initial presentation of the business proposal to the investor (executive summary or business plan).
3. Signature of a non-disclosure agreement (this step is not obligatory, however frequently used).
4. Presentation of the innovative project/business idea (usually in the form of an oral presentation supported by written documents).
5. Joint work (with VC investor) on the business model fine-tuning.
6. Development of a Term Sheet, including:
 - List of key terms of the investment;
 - Business concept valuation;
 - Identification and risk evaluation.
7. Due Diligence – investigation of the business concept and the management team:
 - Checking the technical, economic and legal conditions for the implementation of the project;
 - Often done by external experts;
 - Takes approximately 2-3 months;
 - Focuses on the weak points of the company, entrepreneurial team or business concept;

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- In VC Investor tries to evaluate different risk levels, connected with project/technology/product; market; competitors; legal aspects; management, etc.

8. Term Sheet review:

- The review may be the consequence of the findings of Due Diligence.

9. Investment agreement (final agreement), covering:

- Distribution of shares in the company;
- Milestones of the investment project;
- Investment size and timing – investment rounds;
- Strategies of the investor exit;
- Obligations of the investor.

There are different ways to approach (pitch) the investors. Familiarise yourself with other methods in the video below.

How To Pitch Your SaaS Startup To Investors



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Risks of venture capital funding, methods and selected tools for risk reduction

Venture capital funding can be characterised by the proven advantages, such as: business expertise, access to additional (scarce) resources or competences, connections and networking opportunities, etc.

Nevertheless, at the same time, venture capital funding is connected with substantial risks that the inventor has to be aware of.

Risks of venture capital funding	Explanation
Loss of control	Venture capital could be characterised as financing on steroids, with a large injection of cash and professional – and possibly aggressive – investors. It is likely that venture capital partners will want to be involved in most aspects of the project. The size of their stake could determine how much influence they have in shaping the company's direction.
Minority ownership status	Depending on the size of the venture capital investment in the company, which could be more than 50%, the inventor can lose management control over the project or business.
Forced Management	Typically venture capital funding comes with a few strings attached. First, investors will require a stake in equity. Second, they may want to add management and possibly, remove some key managers currently in place. The forced management changes may come under the request of bringing in a more experienced hand.
Limited Decision-Making Abilities	This risk factor is directly connected with the above mentioned. When operating a startup, the owner may have a very clear vision of where the organisation should be in one, three, or five years. With venture capital funding, it may be required to compromise on the set goals. It may be even required to have regular meetings with the investor before making larger decisions.

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Funding Problems	Venture capitalists often move large sums of money, the capital exchange can take time and business owners must consider it and work around delays. Additionally, it may be required to meet certain milestones (agreed in the investment agreement) before releasing funding. For example, an investor may want to see consistent monthly sales before allowing access to the agreed-upon funds.
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Table: Risks of venture capital funding. Source: Advantages vs Disadvantages of Venture Capital, <https://www.thehartford.com/business-insurance/strategy/business-financing/venture-capital/>; Disadvantages of Venture Capital Funding, <https://www.finsmes.com/2019/07/disadvantages-of-venture-capital-funding.html>

The risk factors can also be associated with interaction with potential investors. There are potential mistakes that can be made. It is good to know them, in order to avoid misunderstandings or to harm innovative project author/team reputation:

- Excessive optimism, but also, conversely, lack of confidence;
- Lack of a clear commercialisation strategy;
- Lack of a clear business model;
- Insufficient market potential (niche projects, located in markets with low value and limited growth potential);
- The underestimation of costs and/or overestimation of expected revenue;
- Lack of reliable documentation supporting the project;
- Concealment of information about the state of the project/company;
- Failure to indicate essential risks associated with the project;
- Unreasonable valuation of the business resulting in significant differences in valuation between the inventor and the potential investor;
- The inventor's lack of conviction to "give" part of the ownership to the investor.

One of the ways to avoid the mentioned risk and problems is to follow the guidelines presented in this material. However, we encourage you to search the Internet on your own and find the answer to the question "How to find and choose the right venture capital financing?". Copy and paste the question to your Internet browser and explore the found results.

Exercise - Multiple Choice with Hints and Feedback

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If the owner of the business cannot take independent decisions regarding the business, it is an example of one of the risks of venture capital funding. Which one primarily?

- Loss of control.
- Minority ownership status.
- Forced Management.
- Limited Decision-Making Abilities.

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Best practices of innovative companies' operation

Introduction

Innovation management in modern enterprises is a complex field that takes into account a wide range of technical, market, financial and social factors. The complexity of the problems is a challenge for both new and existing companies. The analysis of cases of problems and successes of companies that struggled with innovation is an important lesson in helping to identify the causes of successes and failures of innovation processes so far.

In the first unit, selected examples of best practices relating to innovation processes are presented. They refer to processes and entities that can be considered as examples that have been very successful in their field.

The second unit presents cases that show different components of innovation processes in enterprises. Within the presented cases, not only the success factors but also the causes of market failures of innovative solutions were analysed.

Best practices

In this unit, two best practices in innovation management are presented – both are related to successful innovative corporations. The first is related to the effective creation of successful interconnection between corporate innovation culture and organisational rules in 3M corporation. The second deals with the creation and implementation of Innovation Management Framework in the Microsoft Corporation.

1. Linking innovation culture and organisational rules - 3M best practice

The 3M Company is a multinational conglomerate corporation operating in the fields of industry, worker safety, US health care, consumer goods and others. The company produces over 60,000 products under several brands, including abrasives, laminates, adhesives, personal protective equipment, paint protection films, dental and orthodontic products, electrical and electronic connecting and insulating materials, medical products, and others. It is based in Maplewood, near Saint Paul, Minnesota, USA.

3M have created an innovative organisational culture which is integrated with several organisational rules. 3M claims that this becomes 'the way we do things around here' in a genuine sense. It includes four special focus areas:

- Innovation Strategy and Leadership.
- Enabling the Process.
- Building an Innovative Organisation.

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- Linkages and Networking.

Full description of the best practice can be found by clicking at [Link](#).

2. Innovation Management Framework – Microsoft

Microsoft Corporation is an American based, multinational technology company with headquarters in Redmond, Washington, USA. It develops, manufactures, licenses, and sells computer software, consumer electronics, personal computers, and related services. Microsoft is best known for Microsoft Windows and the Microsoft Office software products. It employs more than 150.000 people as of 2020.

The best practice is related to the creation of the Innovation Management Framework (IMF) introduced by Microsoft Corporation. It is designed to help develop a comprehensive, integrated approach to implement and support an innovation management strategy. The IMF provides the repeatable reference architecture for innovation and is intended to allow the sharing and learning of innovation management best practices.

IMF includes best practice processes and solutions that offer a strategic roadmap. The roadmap offers techniques that are proven through experience to improve innovation and innovation management performance. The framework shares lessons learned from Microsoft's innovation strategies and processes that help fuel innovation across the Microsoft enterprise. These processes are used within Microsoft, enabling teams to implement innovative programs that are fit for purpose quickly.

Full description of the best practice can be found by clicking at [Link](#)

Exercise - Multiple Choice

In the case of 3M innovation policy - "enabling the process" means:

- Allocating resources as 'slack'.
- The set of structures and policies to guide innovative activity from picking up signals through to implementation.
- Rewarding the most innovative employees.
- Support for employee networking.

Case studies

In the unit, three cases of innovation management practices are presented – they are associated with issues related to challenges of innovative solutions implementation in practice. The first is related to the innovation in business models in the car-sharing sector. The second deals with process innovation, specifically with implementation of Manufacturing Execution Systems in Siemens. The third one

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describes the process of changing the new product development (NPD) system in the industrial company – ABC Electronics.

1. Innovation in the business model – case of radical innovation (Better Place)

Innovation in business models is now a new dimension of competition. It is hoped that at present, they have the greatest potential for growth and development of companies, as well as their competitiveness and profitability.

Innovations within the business model are accompanied, among others, by attempts to redefine the use of existing products. Road transport is a traditional sphere of the economy, present on the market for over a hundred years. Nevertheless, it is also a field of several innovations in business models aimed at making money from cars. The case of Better Place shows how wide the possibilities are to redefine the functionality of products and systems for offering them on the market. On the other hand, it points out serious limitations and complex risks related to the implementation of radical innovation to the market. It allows the analysis of the reasons for failure of the Better place project.

The case full text can be found at [link](#)

2. Implementation of Manufacturing Execution Systems – process innovation

Siemens AG is a German multinational conglomerate company headquartered in Munich and one of the largest industrial manufacturing companies in Europe. The principal divisions of the company are Industry, Energy, Healthcare (Siemens Healthineers), and Infrastructure & Cities, which represent the leading activities of the company.

Siemens provides good practice for the inclusion of the innovative process in operational activities in an industrial enterprise. They are developed as part of the project connecting the corporation with the environment - "Living Lab" @ Siemens Vienna. In particular, it is about the use and integration of Manufacturing Execution Systems (MES) included in the Industry 4.0 tools. Manufacturing Execution Systems manage and monitor the work in progress on the plant floor. However, in this case, MES also acts as a process innovation as an industrial process integration tool and as a tool used in innovation.

The case video presentation can be found at [link](#)

3. The challenges in implementing portfolio management and a stage-gate system for new product development

The new product development (NPD) systems in industrial companies are based on general assumptions and models as to the structure of innovation processes and the requirements of management and supervision over them. One of them is the stage-gate system – widely used in

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industrial practice models for new product implementation. At the same time, introducing such a system into already existing operations of a given company requires taking into account several elements specific to a given enterprise. This applies to the specificity of production processes, existing management procedures, or the methods of internal communication used. In the case of ABC Electronics company, the construction of the participative process of development of the NPD system was presented. The case surfaced key design elements which add to our understanding of the behavioural preconditions needed for the successful implementation of the process.

The case full text can be found at [link](#)

E-TRIM final exam

Entrepreneurship and company organisation 5

When running a business in the EU and intending to expand to another European country, it is advised to consider establishing a specific type of a company under EU regulations which is called:

- European Enterprise.
- European Union Company Concept.
- European Company.
- Trans-European Company.

Entrepreneurship and company organisation 2

An enterprise which is owned and run by one person is called:

- Sole proprietorship
- Own proprietorship
- Franchising
- Partnership

Commercialization of innovative projects 6

The business plan should fulfil an external function which mean:

- Using a business plan in an advertising activity.
- Using a business plan as a document used by the tax office.
- When it is treated as a planning document intended for the organisers of the project.

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- When is treated as document available to external partners/institutions like banks.

Commercialization of innovative projects 4

Please indicate which element is used in the SWOT analysis:

- Strengths.
 Values.
 Policies.
 Competition.

Commercialization of innovative projects 7

The market and competition part of the business plan can be described using:

- Mind Mapping
 Gantt Chart
 SMART method
 Porter's Five Forces

Commercialization of innovative projects 5

The threat of substitution in the Porters Five-Forces:

- Deals with potential competition.
 Refers to competition in the sector.
 Refers to the possibility of replacement by product with similar (but not the same) characteristics.
 Refers to buyers' bargaining power.

Innovation marketing 3

In BCG matrix, a group of products with a very large market share and definitely positive net cash flow, but probably not growing longer is called:

- Success cows.
 Stars.
 Cash cows.
 Cash marks.



Policy, legal aspects and funding 2

Which type of funding can be used during all stages of the innovative project development?

- Business angels
- Corporate investors
- Family and friends
- Venture capital funds (including seed funding)

Policy, legal aspects and funding 1

One of the eligibility criteria for applying for a patent requires that the invention is not obvious to a person having ordinary skill in the art. Which criteria is this?

- Industrial Applicability.
- Novelty.
- Inventive Step.
- None of the above.