

INNOVATION SURVEY

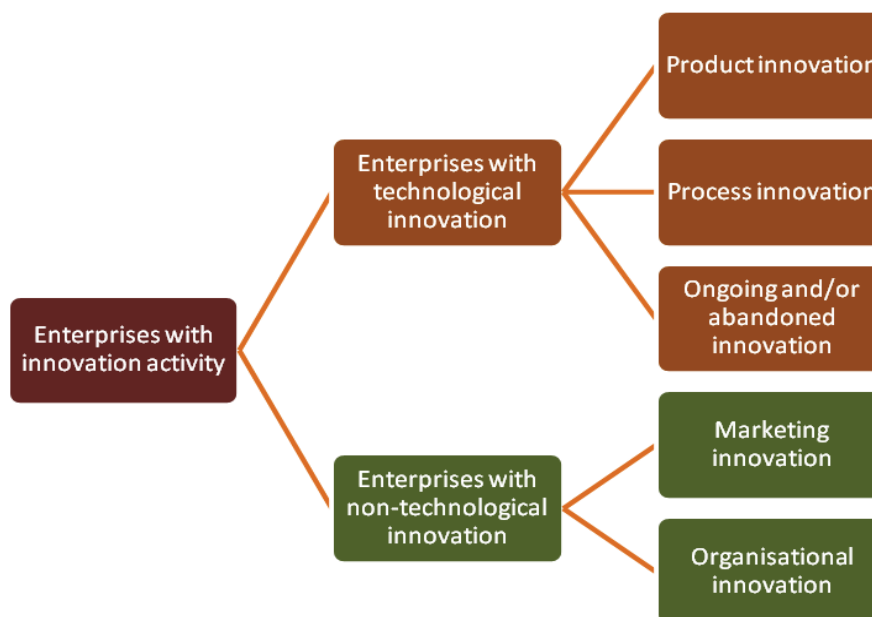
– METHODOLOGY –

1.1 General background of innovation survey

Research, development and support of innovation environment are one of the most important means for rising competitive advantage of products and services. Assuring of functional environment in this field is therefore naturally comprehended as a crucial presumption of a country's economic prosperity. Rising quality of scientific and development base and ensuring its innovation function leads to increasing interest in investment into sunrise industries. Increasing costs and risks connected with innovation creation cause that private economic subjects invest into this sphere less than it is socially desirable. From those and also many other reasons, the innovation field of the entrepreneurship is a part of support and focus of economic policy of the government. It mainly concerns assuring enough risk and development capital, qualified labour force, research background and availability of information sources. Measures focusing on support of innovative entrepreneurial environment include list of regulation tools that positively affect entrepreneurs' behaviour, and their willingness to take necessary risk. Innovative entrepreneurial environment is determined mainly by stable macroeconomic policy, and favourable and transparent legislative. Innovation policy is, however, significantly different from traditional economic policy, because it concentrates mainly on rising quality and competitive strength of products and services through innovations.

The term innovation comes from Latin word „innovare“ – recover. From its meaning it is clear, that it means novelty, newness or renewal in human activity, and from this reason, innovation is a necessary part of the human's life. In this meaning we will not focus on a general human activity, but on an activity that is connected with improving and developing of production of goods and services, production process and economic potential of enterprises. Whilst in the past innovations based on experiences from practice prevailed, these days it is innovations obtained by applying scientific and technological knowledge that prevail. Innovations in their widest meaning go beyond abilities of quantitative statistical survey, they present improvement in quality of progress of production, ecological and social spheres of the life. In the survey that was carried out in the Czech Statistical Office, we concentrated on the narrow meaning of innovations, on so called **technological innovations (product and process)**, it means on the creation of new or improving of existing products and services, production technologies and processes. Innovation in this meaning therefore means a process of carrying out continual changes (in technical layout of the product, production technologies, used materials etc.), and **non-technological innovations (marketing and organizational)**.

For better understanding, see the following scheme with the breakdown of innovation activities according to the OECD methodological manual (Oslo manual 2005).



1.2 Classification of innovations

According to the new conception of innovation by the revised Oslo manual 2005, we have four main types of innovations: **product innovations, process innovations, marketing innovations and organizational innovations**. This classification keeps the highest possible degree of continuity (that is ensuring comparability of data) with the previous definition of technological product and process innovation used in the previous second edition of the Oslo manual 1997. Product and process innovations are closely related to the concept of **technological product and process innovations**. Marketing and organizational innovations compared with the previous definition extend the range of innovations covered by the Manual under **non-technological innovations**.

A product innovation means implementation of goods or services that are new or significantly improved with regard to their characteristics or intended use. It covers important improvements in technical specifications, components and materials, software, user-friendliness or other functional characteristics. Unlike process innovation, it is sold directly to the customer.

Product innovations can utilise new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies. The term “product” is used to cover both goods and services. Product innovations include introduction of new goods and services as well as significant improvements in the functional characteristics or user characteristics of existing goods and services.

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New products are goods and services that differ significantly in their characteristics or intended uses from products previously produced by the enterprises. Significant improvements to existing products can occur through changes in materials, components and other characteristics that enhance performance.

Product innovations in services can include significant improvements in how they are provided (for example, in terms of their efficiency or speed), the addition of new functions or characteristics to existing services, or the introduction of entirely new services.

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in production techniques, equipment and/or software, as well as minimizing damage to the environment or safety risks.

Process innovations include new or significantly improved methods for creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented enterprises or in the procedures or techniques that are employed to deliver services.

Process innovations also include new or significantly improved techniques, equipment and software in associated supporting activities such as purchasing, accounting, computing and maintenance systems.

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Marketing innovations are aimed at better addressing customer needs, opening up new markets, or new positioning of an enterprise’s product on the market, with the objective of increasing the enterprise’s sales.

The distinguishing feature of a marketing innovation compared to other changes in an enterprise's marketing instruments is the implementation of a marketing method not previously used by the enterprise. It must be part of a new marketing concept or strategy that represents a significant departure from the enterprise’s existing marketing methods. The new marketing method can either be developed by the innovating enterprise or adopted from other enterprises or organisations. New marketing methods can be implemented for both new and existing products.

Marketing innovations include significant changes in *product design* that are part of a new marketing concept. Here, product design changes refer to changes in product form and appearance that do not alter the product’s functional or user characteristics. They also include changes in the packaging of products such as foods, beverages and detergents,

where packaging is the main determinant of the product's appearance. An example of a marketing innovation in product design is the implementation of a significant change in the design of a furniture line to give it a new look and broaden its appeal. Innovations in product design can also include introduction of significant changes in the form, appearance or taste of food or beverage products, such as introduction of new flavours for a food product in order to target a new customer segment. An example of a marketing innovation in packaging is the use of a fundamentally new bottle design for a body lotion, which is intended to give the product a distinctive look and appeal to a new market segment.

New marketing methods in *product placement* primarily involve introduction of new sales channels. Here, sales channels refer to methods used to sell goods and services to customers, and not to logistics methods (transport, storing and handling of products), which deal mainly with efficiency.

New marketing methods in *product promotion* involve the use of new concepts for promoting an enterprise's goods and services. Innovations in *pricing* involve the use of new pricing strategies to market the enterprise's goods or services.

Seasonal, regular and other routine changes in marketing instruments are generally not considered as marketing innovations. For such changes to be marketing innovations, they must involve marketing methods not previously used by the enterprise.

An organisational innovation is the implementation of a new organisational method in the enterprise's business practices, workplace organisation or external relations. Its aim is to improve the quality of the enterprise's innovation capacity or performance characteristics.

The distinguishing feature of an organisational innovation compared to other organisational changes in an enterprise is the implementation of an organisational method (in business practices, workplace organisation or external relations) that has not been used in the enterprise before and is the result of a strategic decision taken by the management.

Organisational innovations in *business practices* involve implementation of new methods for organising routines and procedures for the conduct of work. These include, for example, implementation of new practices to improve learning and knowledge sharing within the enterprise.

Innovations in *workplace organisation* involve implementation of new methods for distributing responsibilities and decision making among employees for the division of work within and between enterprise activities (and organisational units), as well as new concepts for structuring of activities, such as integration of different business activities.

New organisational methods in an enterprise's external relations involve the implementation of new ways of organising relations with other enterprises or public institutions, such as the establishment of new types of collaboration with suppliers, and first outsourcing or subcontracting of business activities in production, procuring, distribution, recruiting and ancillary services.

Changes in business practices, workplace organisation or external relations that are based on organisational methods already in use in the enterprise are not organisational innovations. Nor is the formulation of managerial strategies considered an innovation.

Mergers with, or the acquisition of, other enterprises are not considered organisational innovations, even if an enterprise merges with or acquires other enterprises for the first time.

Definition of an innovative enterprise:

By methodology of Eurostat of 2010, innovative enterprises are the enterprises that have implemented a product and/or process innovation or have had ongoing and/or abandoned innovation activities (technological innovation), or have introduced a marketing or organizational innovation in the given period (non-technological innovation). The Community Innovation Survey of 2008 made non-technological innovations equal with technological innovations.

1.3 Coverage, sample size and population

To the data collection we used a harmonized questionnaire of the EU Member States for the innovation survey CIS 2008 (Community Innovation Survey 2008).

The survey was carried out on the basis of the Commission Regulation No. 1450/2004 of 13th August 2004, by which the Decision of the European Parliament and the Council No. 1608/2003/EC about creation and development of the Community statistics in the field of innovation is carried out. Under this obligatory legal act, the national version of statistical **survey CIS 2008** was carried out covering years **2006–2008** and the **reference year of 2008**.

Taking regional dimension into account, we used the sample survey and by the innovation questionnaire CIS 2008 we addressed 8 638 reporting units of the business enterprise sector from the selected fields of manufacturing and services (financial and non-financial sectors) that have at least 10 employees. For a more detailed structure of the population and sample see Table 1 in the table part.

Reporting units were economic subjects (enterprises) that belong to one of the following branches of economic activities (NACE Rev 2.), according to their prevailing activity:

Code	CZ-NACE
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam and air conditioning supply
E	Water supply; sewerage, waste management and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transportation and storage
I	Accommodation and food service activities
J	Information and communication (except NACE 59, 60)
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific and technical activities (except NACE 75)
N	Administrative and support service activities

Sample of the reporting units was extracted from the Czech Business Register by combination of census and stratified sampling in the particular sectors. Their responding duty is under the Regulation No. 421/2007 by which the Program of statistical surveys for year 2008 is established.

The data published in this publication were obtained on the basis of 79 % response rate; (8 638 questionnaires were sent out, 6 804 questionnaires were collected); final results from the sample were calculated on the population using mathematical-statistical methods. Also, variables of sales and number of employees were adopted or estimated. The source of the data was the Structural Business Survey.

The data are published according to the classification NACE Rev 2. by sections and in three size classes according to the number of employees.

- Small enterprises with 10-49 employees,
- Medium-sized enterprises with 50-249 employees,
- Large enterprises with more than 250 employees.

Regional data are published according to NUTS 2 (representative stratification of sample) and NUTS 3 (regions). Eurostat requires data at the level of NUTS 2. For public innovation support from the EU, CZ-NUTS 3 regions are considered too small regions.

Under the EC Regulation and on the basis of treaty, the Czech Republic is under obligation to provide Eurostat with aggregate data and, by conditions of grant contract CIS 2008 within the grant programme EU Grant 2009, provide it with anonymous micro-data (for scientific reasons) . Required outputs include the quality data report (QR CIS 2008). [For further information see the Eurostat website – metadata for innovation statistics]¹

¹ http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136250,0_45572555&_dad=portal&_schema=PORTAL

1.4 The comparison of innovation surveys (CIS)

In the Czech Republic, already 5 innovation statistical surveys have been carried out. In CIS 2001 and CIS 2003, only product and process innovations were surveyed. Since statistical survey CIS 2005, due to the methodological changes initiated by EU/OECD, marketing and organizational innovations have been implemented into surveys. In the case of the CIS 2005 survey, sample size increased up to 8 370 respondents, which was caused by the inclusion of new (recommended) industries, and by the fact that the regional aspect of NUTS 2 was respected, requiring a larger sample in order to ensure representative and quality results.

A basic comparison of all innovation surveys that have been carried out is shown in the following table, where you can find not only the information about the number of reporting units in surveys, but also the proportion of enterprises with technological innovations.

Figures concerning the total share of innovative businesses in surveys cannot be compared easily, because surveys CIS 2001 and CIS 2003 cover only technological (product and process) innovations. On the other hand, surveys CIS 2005 and CIS 2006 cover also non-technological (marketing and organizational) innovations in the total number of innovative enterprises. These figures are affected by the inclusion of new industries in CIS 2005 and CIS 2006. Stratification according to NACE Rev 2. and the extended list of recommended industries are quite a significant change. In the Czech Republic, it was preferred to maintain the comparability principle of industries between CIS 2006 and CIS 2008. Some of the recommended industries are not included in CIS 2008 (NACE 01-04, 59, 60, 75). Core industries are the same in all EU countries and the data are comparable internationally.

TAB 1.1 Comparison of innovation surveys (CIS)

Survey/ Period	Main type of innovation (% of the total of all enterprises)			Reporting units (Enterprises)		
	Product innovation	Process innovation	Product or process innovation	Number of reporting units in the survey	Coverage of population	Response rate
	(%)	(%)	(%)		(%)	(v %)
<i>CIS 3 (1999–2001)</i>	23	17	29	5 829	25	63
CIS Light (2002–2003)	22	12	26	4 678	20	81
CIS 4 (2003–2005)	20	24	29	8 370	20	74
CIS 2006 (2004–2006)	19	22	27	8 475	20	79
CIS 2008 (2006–2008)	19	25	29	8 638	20	79

The coverage of population by sample (based on used stratification) remains on 20 %, as can be seen above.