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Jerzy SZKUTNIK[1]
Monika PIŚNIAK[1]

INNOVATION MANAGEMENT IN POLISH ENTERPRISES

The modern enterprise operates in a turbulent, demanding and unstable environment. Technical and technological progress as well as socioeconomic development create new opportunities but, at the same time, they force enterprises to continuously increase the quantity and quality of the products and services offered. Enterprises, wanting to meet the expectations and requirements of the market, are forced to look for and introduce innovative, risky and expensive solutions. The focus of enterprises on innovative solutions in the area of management is conditioned by an accurate diagnosis of the current situation and also by accurate determination of the direction of future activities. This article aims to show how Polish enterprises demonstrated innovation in 2013–2016 and what kind of innovations were introduced. The second goal of the article is to answer the question of whether it is worthwhile developing innovations in organizations and whether they are an important element of the company's development.

Keywords: *management, decision-making, innovation*

1. Introduction

A prerequisite for diagnosing the situation of a market and determining its trends is the acquisition and processing of information and market signals. Knowledge and information, together with their quality and timeliness, are important factors of competitiveness. Success in the economy today is measured not only by a company's market share, but also by the knowledge management process and the ability to use the company's intellectual capital [6].

[1]Czestochowa University of Technology, ul. Dąbrowskiego 69, 42-201 Częstochowa, Poland, e-mail addresses: szkutnik@el.pcz.czest.pl, m.pisniak@wp.pl

The currently visible smart growth, i.e., development of the economy based on knowledge and innovation, is one of the main activities currently indicated by the European Commission in the Europe 2020 Strategy [4], which replaced the Lisbon Strategy. The priority motto of these initiatives, as mentioned in the European strategy, is: *Including all entities and regions in the innovation cycle: not only the largest enterprises, but also small and medium ones, from all sectors* [3].

One can also observe the growing importance of innovation in the market economy, which is becoming the basis for introducing a strategic orientation towards innovation in enterprises. In consequence, this leads to the innovativeness of an enterprise, which is understood as: the ability not only to create and implement innovations, but also their absorption, which is associated with active involvement in innovative processes [18]. Innovations are understood as one of the ways to achieve company's strategic goals but also as a basic factor in the strategy. Therefore, innovation processes in an enterprise should not be accidental, their integration into the company's strategy should be defined [17]:

- The general strategy may have the character of an operational strategy, that is to say, planning the company's operations.
- A strategy for innovation complements the company's overall strategy or becomes a general strategy if the company's decisions are focused on innovation.

The risk associated with innovations is currently undervalued due to the specificity of innovations which are most often treated as obvious phenomena or processes occurring within an enterprise. This situation is derived from the socialist economy, when, as a consequence of the risky nature of innovations, they were not implemented in the national economy at that time (either on the official market or on the "black" market). It is true that this is a closed chapter in the history of the Polish economy. However, the practical effects are still visible, e.g., in the behaviour and activities of participants in economic life.

Innovation is understood as creating something new, renewing, implementing new technologies or creating a new organization. Technological innovation is a consequence of scientific and technical progress, organizational and institutional innovations are closely related to entrepreneurship which makes it an indispensable element. The implementation of innovations in an enterprise is associated with a particularly high degree of risk.

According to one of the canon of textbooks on innovation management, there is a need to support risk taking as an incentive to innovate: *Risk taking involves tolerating a state of uncertainty and ambiguity. In a climate conducive to risk taking, bold new initiatives can be initiated, even those whose outcome is uncertain. People feel that they are allowed to take risks in relation to certain ideas. It happens that they start something without any support just to be the first* [19].

Innovations create new knowledge which then undergoes diffusion, expanding the potential of the economy to create new products and more efficient methods of operation. Such beneficial phenomena depend not only on technical knowledge but also on

other forms of knowledge that are used to create innovations in products and processes as well as marketing and organizational innovations. There may be significant differences between specific types of information in terms of the impact that they have on the efficiency of companies' operations and on economic changes. For this reason, it is important to be able to determine whether an innovation has been implemented and what effects have been achieved by particular types of innovation [16].

Innovations or changes can take many forms in an enterprise. Four main areas of such changes can be specified as follows [19]:

- Product innovations: changes in the products or services offered by a given company.
- Process innovation: changes in the methods of production and delivery.
- Positioning innovations: changes in the circumstances in which goods or services are introduced.
- Innovations of paradigms: changes in the main mental models that shape the functioning of the company.

In most processes occurring within an enterprise, risk also exists in the innovation process. Such risk is inextricably linked with management processes. There is a need to maintain it within certain limits, and this requires taking into account the possible sources of risk using resource planning and compensatory activities [13].

2. The concept of innovation

Innovation is understood as creating something new, renewing, implementing new technologies, or creating a new organization. Technological innovations are a consequence of scientific and technical progress, organizational and institutional innovations are closely related to entrepreneurship, which makes it an indispensable element. The implementation of innovations in an enterprise is associated with a particularly high degree of risk. *Innovation is the implementation of a new or significantly improved product, service or process, a new marketing method or a new organizational method in business practice, workplace organization or in relations with the environment* [2]. At the same time, four types of innovations can be distinguished as follows [15]:

- process, that is, the implementation of a new or significantly improved method of production, delivery or creation and provision of services,
- product, that is, introducing products or services that are new or significantly improved in terms of their features or applications,
- marketing, the implementation of a new marketing method which involves significant changes in the design or construction of the product, packaging, distribution, promotion or pricing strategy,

• organizational, that is, the implementation of a new organizational method in the principles of operation adopted by the company, changes in the organization of a workplace or relations with the environment.

Innovations are most often perceived as [15]:

• something novel in a given country, in a given institution/organization, or in a given region – a way of acting, a phenomenon, or a resource that has never existed before or which an organization has not used so far,

• an invention on a global scale, something that has never been seen anywhere before.

Innovativeness is characterized by [15]:

• the degree of novelty (scale of the enterprise, national, global),

• the degree of diffusion – the potential range of innovation, i.e., starting from the first implementation in an enterprise, it spreads to other enterprises, regions, countries, etc. (imitation, adaptation).

Innovative projects are thus an opportunity to use knowledge to solve practical business problems.

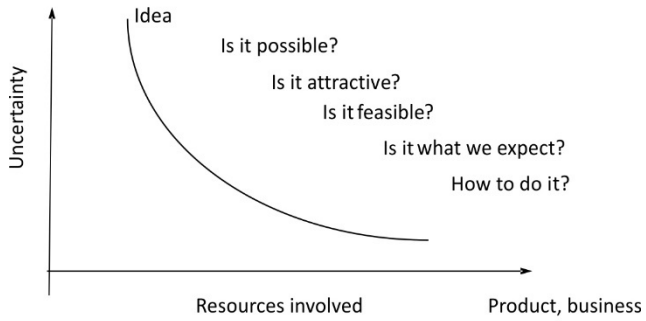

Fig. 1. A graphical representation of how the level of uncertainty decreases according to the resources involved in an organization [15]

In Figure 1, one can see how the level of uncertainty in an enterprise changes according to the number of answers to significant questions in the decision making process. The process of searching for and implementing new concepts in creating effective economic mechanisms for the absorption of innovation should take place at three levels: employees, company and the economy (regional, national, and transnational systems). New ideas and new concepts for shaping innovative processes are necessary for this. Linking innovation with changes is understood as a modification in the structure of the economic process, which may include elements such as purpose, criteria, means, conditions, methods and effects. Views of the essence of innovation are varied, but the ideas of novelty and change appear in almost every definition [8]. Therefore, it can be as-

sumed that the term innovation is understood as a change in the existing economic system, consisting of developing and implementing new solutions for an enterprise and improving the existing ones, which aim to improve the efficiency of the firm's functioning, and thus increase the purposefulness of its actions and attain greater economic benefits. Analysis of the essence and characteristics of innovations in an enterprise enables us to emphasize their most important elements: strategic character, multidimensionality, and general form. It should be remembered that entrepreneurial management is a condition for the effective and rational introduction of innovations on domestic and global markets and the formulation of innovation strategies [9]. This requires a sophisticated economic market mechanism and the use of its regulatory functions, considered from the point of view of innovative processes in the economy.

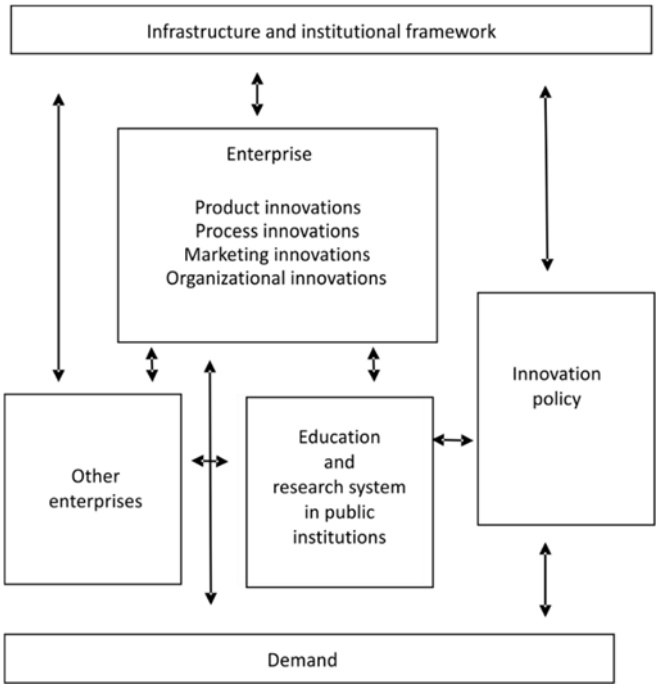

Fig. 2. The proposed system for measuring innovation [16]

Each business entity undertakes a lot of complex activities to achieve its strategic goals, which certainly include proinnovation activities consisting of creating and implementing innovations that allow a firm to gain a competitive advantage, and thus to achieve its strategic goals, which will result in success on the market. Both the various manifestations of pro-innovation activities and their results depend on many premises that define them [10].

Innovations create new knowledge, which then undergoes diffusion, increasing the potential of the economy to create new products and more efficient methods of operation. Such beneficial phenomena depend not only on technical knowledge but also on other forms of knowledge that are used to create innovations within products and processes, as well as marketing and organizational innovations. There may be significant differences between specific types of information in terms of the impact they have on the efficiency of companies' operations and on economic changes. For this reason, it is important to be able to determine whether an innovation has been implemented and what effects have been achieved by particular types of innovation [16].

In Figure 2, one can see the measurement system from a company's perspective, i.e., as the target of statistical surveys in the field of innovation. Other models of the innovation process, such as the chain-link model, developed by Kline and Rosenberg [12], or dynamo innovation (OECD/Eurostat 2008) give a useful theoretical view of the course of innovation processes, but are a weaker basis for constructing statistical surveys. The main features of these measurement frames are presented below [16]:

- innovations in a company,
- links with other companies and public research institutions,
- institutional framework in which companies operate,
- the role of demand.

3. Is it worth taking risks and introducing innovations?

In the contemporary Polish economic literature, one can notice the dual nature of the occurrence of risk, i.e., its effects are not only linked to losses, but also to profit [5]. Defining risk in this way gives a solid basis for further analysis to answer the question asked in the title of this chapter.

Currently, the successes of Polish entrepreneurs, unfortunately, cannot be ascribed to increased innovativeness in the Polish economy. In particular, microenterprises do not perceive innovation as an opportunity for development, indicating at the same time barriers such as inadequate financial resources, high costs and risk of innovative undertakings, or that innovation has already been implemented. However, 2/3 of Polish enterprises do not notice barriers in the process of implementing innovation [11]. It is necessary to emphasize that Polish firms view innovations as the least important instrument for increasing competitiveness, they primarily indicated price and the quality of a product.

One of the textbooks belonging to the canon on innovation management states that risk taking should be encouraged as an incentive for innovation: *Risk taking involves tolerating uncertainty and ambiguity. In a climate conducive to risk taking, bold new initiatives can be initiated, even those whose outcome is uncertain. People simply feel*

that they can take a risk with regard to certain ideas. It happens that they start something without any support just to be the first [19].

Another important interpretation of the relation between risk and innovation is the following: *Risk aversion is something normal and healthy. Progress and risk are, however, inseparable companions. You cannot achieve progress without taking risks. Risk-taking must be encouraged* (...) *We must open ourselves to experimentation and have a philosophical attitude towards unfavourable courses of affairs* (...) *Management must accept this relationship between risk and innovation and find mechanisms that will successfully manage such risk in the organization. Directors must also unambiguously inform managers that a reasonable level of risk will be accepted, because it is the handmaid of progress* [14, p. 148]. These views clearly support taking risks, which are inseparable from the innovation process, encouraging the participants of economic life to accept the relationship between risk and success in the future.

4. Innovative activity of enterprises

Referring to the question raised in the previous chapter, we now consider data on how Polish enterprises introduced innovations in 2013–2015 which, together with the ideas contained in the discussion above, should enable us to describe the scale of innovation in each category. This information was prepared on the basis of the results of the CSO surveys on Innovations in Industry and Innovations in the Service Sector carried out in 2017 on the fields of innovative activities conducted in 2014–2016, based on the method introduced in the *Oslo Manual* [16, p. 122–136] (Figs. 3, 4).

The analysis is based on data from the Central Statistical Office who propose the following definition of an innovative company: *An innovative company is one that introduced at least one product or process innovation during the period considered, or implemented at least one innovative project that was interrupted or discontinued during the study period (i.e. not completed successfully) or not completed by the end of this period (i.e. still in progress). An innovative company in the field of product or process innovations is a company that during the period considered introduced at least one product or process innovation (a new or significantly improved product or a new or significantly improved process)* [7].

- In the years 2014–2016, 20.3% of industrial enterprises and 14.5% of service enterprises showed innovative activity.
- In 2016, expenditure on innovative activity amounted to 28304.7 million PLN in industrial enterprises and 10706.2 million PLN in service enterprises.
- The share of revenue from sales of new or significantly improved products introduced onto the market in 2014–2016, as a percentage of total revenue, in industrial enterprises amounted to 8.1%, and in services to 3.9%.

The percentage of industrial enterprises that were innovative in 2014–2016 was higher by 1.4 pp than in 2013–2015, while in the case of service enterprises, this increase amounted to 3.9 percentage points. New or significantly improved products or processes were introduced by 18.7% of industrial enterprises and 13.6% of service enterprises, i.e., by 1.1 pp and 3.8 pp more, respectively, than in 2013–2015.

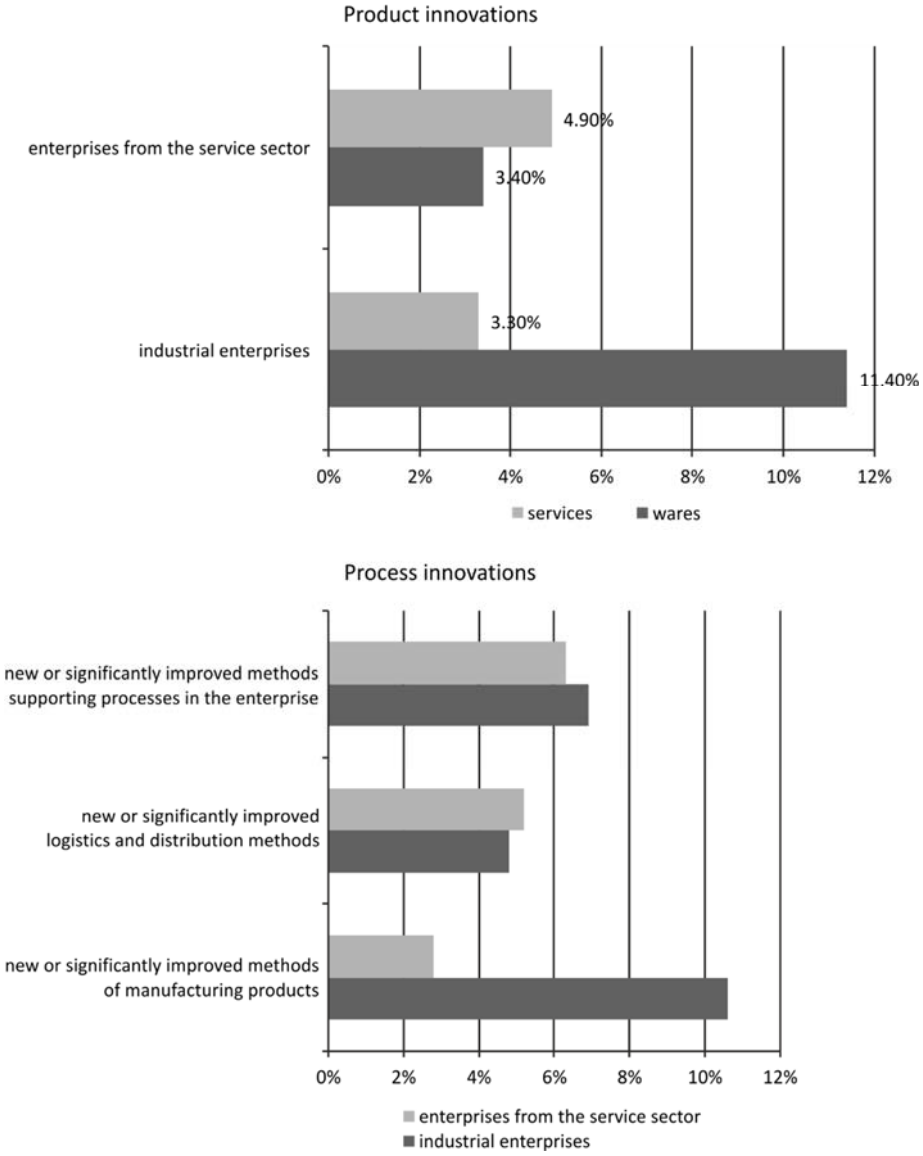

Fig. 3. Product and process innovations introduced in 2014–2016

As part of product innovations, new or significantly improved products were introduced by 11.4% of industrial enterprises, while new or significantly improved services by 4.9% of service enterprises. Among industrial innovations, industrial enterprises

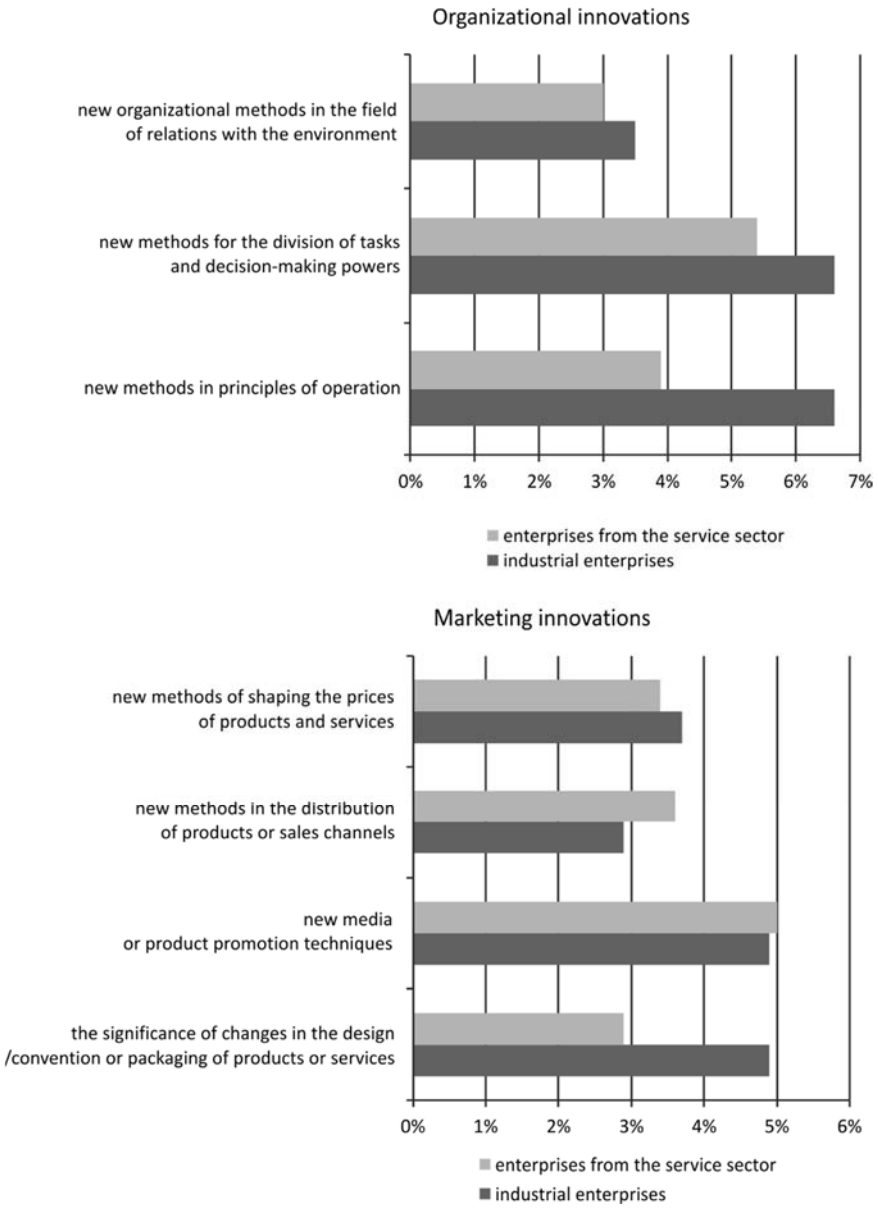

Fig. 4. Organizational and marketing innovations introduced in 2014–2016

most often implemented new or significantly improved methods of manufacturing products (10.6%), and service entities – new or significantly improved methods supporting processes in the enterprise (6.3%).

Table 1. Innovative enterprises in 2013–2015 (a) and 2014–2016 (b) [7]

Enterprises		Innovatively active	Those that introduced innovations				
			Product or process	Product	Process	Organizational	Marketing
Industrial	a	18.9	17.6	11.8	13.0	8.1	7.1
	b	20.3	18.7	12.4	15.2	9.5	9.2
From the services' sector	a	10.6	9.8	4.8	7.4	8.1	6.6
	b	14.5	13.6	6.9	10.4	7.6	7.2

The largest share of industrial enterprises that introduced product or process innovations occurred in the field of mining crude oil and natural gas (66.7%), followed by production of basic pharmaceutical substances, pharmaceuticals and other pharmaceutical products (45.0%), while in services the largest shares were observed in the fields of insurance, reinsurance and pension funds, excluding obligatory social insurance (69.0%) and research and development (50.6%).

Among organizational innovations, industrial enterprises also frequently introduced new methods in their operating principles, as well as new methods for the division of tasks and decision-making (6.6% of entities), whereas service companies mainly implemented new methods for the division of tasks and decision-making (5.4%). Among marketing innovations, industry mainly introduced changes in the design/concept or packaging of products or services, as well as new media or techniques for product promotion (4.9% of enterprises), and service enterprises mostly introduced innovations in new media or techniques for product promotion (5.0%). When analysing the relation between the size of a firm and innovativeness, enterprises employing 250 people or more were the most likely to be innovative. Both in industry and service sector, enterprises in this size class introduced process innovations most often (51.0% and 37.1%, respectively).

5. Summary

The question is, why are there so few innovative companies? The answer is probably found in the concept of risk. The basic reason for the occurrence of risk in innovative projects is ignorance and the uncertainty caused by this. It follows that the smaller the amount of knowledge an entrepreneur has in some area, the more uncertain it is for him, which leads to him making bad decisions or refraining from making good decisions.

In the process of developing innovative undertakings, the following stages can be distinguished: idea, incubation, development, maturity, and decline. A high level of risk accompanies innovative undertakings, primarily in the initial stages. Therefore, it can

be stated that risk management causes an innovative undertaking to also become an innovative enterprise. Risk control allows a company to pass from the incubation stage to the development stage.

6. Conclusions

The Polish state has so far struggled with the problem of generating sufficiently strong proinnovation impulses to change the paradigm of development. The measures that have been taken recently are an important step forward, but without their continuation in the coming years, the face of the Polish economy will not change. Final success depends on the consistent implementation of plans for reforming the knowledge creation sector, significantly increasing public expenditure on R & D – also from domestic funds – and the continuous improvement of existing instruments to support innovators, taking into account the lessons learned from the past few years. Currently, a significant proportion of funds are spent inefficiently due to systemic errors, e.g., failing to address the barriers faced by innovators and excessive conservatism in deciding which projects to finance. Public support goes to low-risk investment projects by large enterprises, which generates significant levels of crowding out and barren loss [1].

The main barrier in the implementation of innovative ventures is risk. The level of risk in a given undertaking is directly proportional to its innovativeness. In the process of striving for change, innovative enterprises themselves create a risk. It should be noted that the level of risk increases when implementing innovative projects in areas that are already highly popular.

As previously mentioned, the basic reason for the occurrence of risk in innovative undertakings is ignorance and the uncertainty caused by this. The lower an entrepreneur's level of knowledge in a given area, the higher the level of uncertainty, which leads to making bad decisions or refraining from making good decisions.

Entrepreneurs are another factor generating risk. They are mainly young people and scientists, who due to the conditions in which they have been functioning so far (in the case of young people: a lack of responsibility, lack of independence, and constant financial support; in the case of researchers: stable employment, unlimited pursuit of learning, the right to err), are not prepared for functioning on the free market and do not have the knowledge that would enable them to manage the risk.

Analysing the results of surveys conducted by the Central Statistical Office in 2013 –2016 among Polish enterprises, it is noticeable that industrial enterprises mainly focus on product innovations, innovations related to manufacturing techniques, and organization-related innovations. On the other hand, service enterprises deal with the introduction of innovations to a lesser extent. Such enterprises only show a higher propensity to implement marketing innovations.

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