

## 2. Research conceptualisation and operationalisation

### 2.1. Operational definition and typology of innovation definitions

Innovation is usually defined as various products, processes and phenomena of technical, organisational, social or psychological character. A different depiction of innovation results from a quite short tradition of research on innovation and from various theoretical approaches. When one reaches to historical sources of this notion, innovation (Latin: *innovatio* – renewal, introduction of something new) is inseparably connected with the notion of change, reform, creation and dissemination of a new idea or the one perceived as new. A close reference to the language origin of this notion allows distinguishing its two main areas. Firstly, innovation may be understood in a less radical way as a renewal of some part of reality, its reconstruction. Secondly, there is also a more radical interpretation, according to which innovation is an introduction of new quality until the particular reality has been contradicted. The aforementioned ways of understanding innovation are continuously present in the modern ways of defining the analysed phenomenon.

The contemporary understanding of the notion of innovation was introduced by Joseph A. Schumpeter into social-economic sciences at the beginning of 20th century (year 1912)<sup>29</sup>. He defined this notion in a broad sense as (1) implementation of new products into production or development of the existing ones, (2) use of a new production method or development of the existing one, (3) opening of a new market, (4) introduction of new sales or purchase channels, (5) use of new resources or semi-finished products, (6) implementation of new

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<sup>29</sup> J.A. Schumpeter, *Theory of economic development*, Transaction Publishers, New Jersey 1983, p. 104.

production organisation. He understood innovation as a creation of fundamental or radical changes that include transformation of a new idea or technological invention into a market product or process. In his opinion, dissemination of innovation constitutes a separate type of changes that he called imitation. It means that each time innovation creates a unique change (one-time, discontinuous). Imitation on the other hand is a continuous and repeatable change. The broad understanding of innovation does not concern only the technical sphere but also economic undertakings, organisational changes and the ones in the area of human relationships<sup>30</sup>.

J.A. Schumpeter also differentiates the terms of “innovation” and “invention” (novelty, prototype, model) because many inventions are never introduced into production, implemented or disseminated. According to the author of *Theory of economic development*, the sources of innovation should be mainly searched in exploratory and entrepreneurial invention of entity.

The necessity to implement and disseminate innovation is also emphasised by another classical thinker of innovation management – Peter F. Drucker. He states that innovation that is not related to the market success is only a concept, not achieved ideas. However, in contrary to Schumpeter he sees a greater range of potential innovation sources. They may have their origin both inside every organisation and outside it, in its environment. The potential sources of innovative ideas are, according to Drucker: (1) unexpected success or failure of an undertaking, including launch of a new product as well as unexpected external phenomena, e.g. weather change, war break-out, (2) incongruities – discrepancy between the existing reality and the expected, designed situation, (3) production process needs – necessity of improvement of weaknesses in the production process, (4) surprising changes in the industry or market structure, (5) demographic changes, (6) changes in perception, social attitude and values, (7) finally, new knowledge<sup>31</sup>.

These days innovation is mainly defined as a successful implementation of new ideas in the economic sense<sup>32</sup>, and this, in a different way than Schumpeter stated, not necessarily radically. Here innovation is treated as a continuation of technical-organisational changes that involves on one hand simple modifications

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<sup>30</sup> S. Mikosik, *Teoria rozwoju gospodarczego Josepha A. Schumpetera*, PWN, Warszawa 1993, pp. 67–74.

<sup>31</sup> P.F. Drucker, *Innovation and entrepreneurship*, Elsevier, Burlington 1985, p. 29.

<sup>32</sup> M.E. Porter, *The Competitive Advantage of Nations*, The Macmillan Press Ltd, London 1990.

of the existing products, processes and practice even to basically new products, services and processes on the other hand. Realisation of innovation requires a number of scientific, technological, organisational, financial and commerce activities. However, economic effectiveness of the changes introduced is the most important in the view of a modern way of enterprise management, especially the ones from the sector of small and medium enterprises<sup>33</sup>, as it enables generating the resources necessary for survival and development in a highly competitive environment. This way of understanding innovation is also close to the authors of autodiagnostic tool – Matrix of Marketing Needs, it has found its placement on the stage of forming conceptualisation and operationalisation of the project research problem<sup>34</sup>.

**Box 1.** Operational definition of innovation in the project “With matrix to innovative entrepreneurship”

In the process of project research conceptualisation a definition was adopted which strictly corresponds with a depiction of innovation as a synthesis of activities and at the same time they are characterised by a particular economic effectiveness. Innovation consists of multi-dimensional activities leading to creation and then to implementation of new solutions that enable achievement of competitive advantage compared to the environment. In the minimum variant innovation provides survival in the permanently changing environment.

Source: own work.

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<sup>33</sup> Micro enterprises as well as small and medium-sized enterprises are defined on the basis of the number of employees and turnover or total yearly balance. Medium-sized enterprise is the one that employs less than 250 employees and its yearly turnover does not exceed euro 50m or total yearly balance does not exceed euro 43m. Small enterprise is the one that employs less than 50 employees and has a total yearly turnover or total yearly balance not exceeding euro 10m. Micro enterprise is the one that employs less than 10 employees and its total yearly turnover or total yearly balance does not exceed euro 2m, [http://europa.eu/legislation\\_summaries/enterprise/business\\_environment/n26026\\_pl.htm](http://europa.eu/legislation_summaries/enterprise/business_environment/n26026_pl.htm) [accessed: 15.05.2014].

<sup>34</sup> More on conceptualisation of the research project may be found in the publication edited by P. Weryński, *Matryca Potrzeb Marketingowych w sektorze MMŚP. Diagnoza problemu i konstrukcja narzędzia*, Difin, Warszawa 2012.

According to the textbook that is already deemed as classical – *Oslo Manual*<sup>35</sup>, innovation takes place when a new or developed product is introduced into the market or a new or developed process is used in production; however, the aforementioned product and innovation process is new at least in terms of the enterprise that introduces it. According to *Oslo Manual*, technical innovation means an objective improvement of product, process or delivery system features in relation with the previous products and processes. Minor – technical or aesthetic – product or process modifications that do not affect results, costs or material, energy and components use, are not treated as technical innovation<sup>36</sup>.

**Box 2.** *Oslo Manual* Textbook (OECD)

The Organisation for Economic Co-operation and Development (OECD) has ordered the terms connected with innovation. In 1997 it issued *Oslo Manual* textbook which currently constitutes a commonly adopted, international standards applied in research on innovation. According to OECD innovation means: “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations”<sup>37</sup>. In the textbook there are four types of innovation distinguished which in a great extent are correspondent with classifications of innovation strategy considering the criterion of area that they concern (subject of innovation): **product innovation, process innovation, marketing innovation or organisational innovation**<sup>38</sup>.

Source: full text of the textbook is also available on the website: <http://www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo>.

<sup>35</sup> OECD, *Oslo Manual. Then Measurement of scientific and technological activities. Proposed Guidelines for Collecting and Interpreting Technological Innovation Data*, OECD/Eurostat, Paris 1997.

<sup>36</sup> E. Stawasz, *Innowacja*, [in:] K.B. Matusiak (ed.), *Innowacje i transfer technologii. Słownik pojęć*, PARP, Warszawa 2005 and E. Stawasz, *Innowacje a mała firma*, Uniwersytet Łódzki, Łódź 1999.

<sup>37</sup> OECD, Eurostat, *Podręcznik Oslo. Zasady gromadzenia i interpretacji danych dotyczących innowacji*, ed. 3, Ministerstwo Nauki i Szkolnictwa Wyższego, Departament Strategii i Rozwoju Nauki – Polish edition, Warszawa 2008, p. 48.

<sup>38</sup> More on four types of innovations may be found in: A. Hilarowicz, A. Lech, *Procesy i strategie*, [in:] P. Weryński (ed.), *Matryca Potrzeb Marketingowych w sektorze MMSp. Diagnoza problemu i konstrukcja narzędzia*, Difin, Warszawa 2012, pp. 58–74.

## Typology of defining the notion of innovation

In order to organise the presentation of different ways of defining the notion of innovation in the contemporary literature this subsection will take an attempt to analyse their typology. A basic criterion for assigning particular concepts to a given type will be a ratio in the category of novelty, progress and syndrome variable – the synthesis of activities.

### Type 1. Innovation as a novelty

Definition of innovation as a novelty is the easiest way to conceptualise this notion. In this approach innovation means the creation of something objectively new. However, this definition ignores further stages of wider socio-economic acceptance (implementation and diffusion) of novelty. Definitions presented below are examples of such approach.

- Percy R. Whitfield claimed that innovation is a sequence of complex activities involving the process of solving problems which leads to the creation of a comprehensively developed novelty<sup>39</sup>.
- Stefan Kasprzyk defines innovation as a previously unknown way of satisfying new needs<sup>40</sup>.
- Genrikh S. Altshuller described innovation as a different way of organising, synthesising, expressing knowledge, perception of the world and creation of new ideas, perspectives, reactions and products<sup>41</sup>.
- According to Małgorzata Dolińska “innovation is every thought behaviour or thing which is new, thus qualitatively different from other existing forms”<sup>42</sup>.

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<sup>39</sup> P.R. Whitfield, *Innowacje w przemyśle*, PWE, Warszawa 1979, p. 26.

<sup>40</sup> S. Kasprzyk, *Innowacje od koncepcji do produkcji*, Instytut Wydawniczy CRZZ, Warszawa 1980, p. 26.

<sup>41</sup> B. Kozusznik, *Kluczowa rola psychologii we wspieraniu i w stymulowaniu innowacyjności*, [in:] B. Kozusznik (ed.), *Psychologiczne uwarunkowania innowacyjności*, “Chowanna”, tom 2(35), Wydawnictwo Uniwersytetu Śląskiego, Katowice 2010, p. 29.

<sup>42</sup> M. Dolińska, *Innowacje w organizacjach u progu XXI wieku*, [in:] I. Hejduk (ed.), *Przedsiębiorstwo przyszłości. Fikcja i rzeczywistość*, Orgmasz, Warszawa 2004, p. 44.

**Box 3.** Product innovation

**Product innovation** is an introduction of a product or service which are new or significantly improved in terms of their features or applications. This category involves improvements to the technical specifications, components or materials, firmware, user friendliness and other functional characteristics, for example increasing efficiency or the speed of service, adding new functions or features to the existing services or introduction of completely new services. We can distinguish between the notion of “product innovation” and “innovation in product”, where the latter means development of a new application of a product with only minor changes to its technical specification<sup>43</sup>. In literature the use of such innovations is given as justified in the context of shortening life cycles of products. The term “product technically new” means that general changes are purely aesthetic, referring solely to the appearance of product and, thus, they are not considered as innovative.

Source: own work based on: [www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo](http://www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo) [accessed: 12.03.2014].

**Type 2. Innovation as a novelty application**

This way of defining innovation is complementary to the previous one, thus creating something objectively new, which is then implemented and promulgated as new. It belongs to the theoretical concepts most commonly and frequently used. The previously mentioned classics – Schumpeter and Drucker, represent this type.

- Joseph A. Schumpeter claimed that innovation means a new combination of different material elements and productive forces of a man, the essence of which is to create a new product or to implement to the market products with new features, to use a new method of production, find a new market, gain new sources of raw materials or to introduce a new organisation of a given industry<sup>44</sup>.

<sup>43</sup> OECD, Eurostat, *Podręcznik Oslo. Zasady gromadzenia i interpretacji danych dotyczących innowacji*, ed. 3, Ministerstwo Nauki i Szkolnictwa Wyższego, Departament Strategii i Rozwoju Nauki – Polish edition, Warszawa 2008, pp. 50–51.

<sup>44</sup> J.A. Schumpeter, *Theory of economic development*, Transaction Publishers, New Jersey 1983, p. 104.

- Charles Freeman identified innovation with the first commercial introduction of a new product, process, system or device<sup>45</sup>.
- According to Edwin Mansfield innovation means first application of an invention, thus it should be treated as a manifestation of technological progress, which means a process of creating and promulgating technical changes generating socio-economic profits<sup>46</sup>.
- Peter F. Drucker defines innovation as a “special tool of entrepreneurs due to which changes make the opportunity to take up a new business or new services”<sup>47</sup>.

### Type 3. Innovation perceived as a novelty

In this approach to the concept of innovation it is not essential for innovation to have absolutely objective existence. But it should be perceived by prospective customers as a qualitatively new. It is sufficient if innovation gains the status of intersubjective innovation perceived as new, for instance by certain professional environment.

#### Box 4. Process innovation

**Process innovation** takes place through implementation of a new or significantly improved method of production or delivery. We may include here significant changes in technology, equipment and/or software and innovations within the projects (including additional activity, such as delivery, accounting, IT support and maintenance)<sup>48</sup>. Increasing efficiency of processes through optimisation of existing processes or building an improved model of activities is meant to provide organisational perfection and to reduce the costs incurred by the company.

Source: own work based on: [www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo](http://www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo) [accessed: 12.03.2014].

<sup>45</sup> W. Janasz, K. Koziół, *Determinanty działalności innowacyjnej przedsiębiorstw*, PWE, Warszawa 2007, p. 14.

<sup>46</sup> Ibidem.

<sup>47</sup> P.F. Drucker, *Innovation and entrepreneurship*, Elsevier, Burlington 1985, p. 29.

<sup>48</sup> OECD, Eurostat, *Podręcznik Oslo. Zasady gromadzenia i interpretacji danych dotyczących innowacji*, ed. 3, Ministerstwo Nauki i Szkolnictwa Wyższego, Departament Strategii i Rozwoju Nauki – Polish edition, Warszawa 2008, pp. 51–52.



- Philip Kotler: “Innovation refers to any good, service or idea which is perceived by someone as new”<sup>49</sup>.
- Everett M. Rogers: for human behaviour it is not important whether a given idea is objective i.e. recently discovered or created, but if it is perceived by people as new<sup>50</sup>.

#### Type 4. Innovation as progress

Innovation defined in such a way is characterised axiologically and introduces the category of assessment – progress, thus better, fuller, more efficient condition than the previous one. Operational use of this type of defining innovation is limited to the situations where there are at least intersubjective criteria of progress accepted by defined groups, socio-occupational environments.

- Zbigniew Pietrusiński uses the notion of *expressis verbis* – innovations are changes deliberately introduced by a man or designed by a cybernetic system which consist of replacing the existing states of affairs, assessed positively in the light of specific criteria that make up the progress<sup>51</sup>.
- Irena Hejduk and Wiesław M. Grudzewski argue that innovations are all changes, both material and non-material, which allow to navigate better on the market or reach better economic results<sup>52</sup>.

#### Type 5. innovation as a synthesis of activities

The fifth type of conceptualisation of innovation as a synthesis of activities is widespread today, and is even considered as a standard, theoretical and methodological model. It covers all stages of creating and disseminating innovation as well as it points at the areas where innovations are implemented.

According to the aforementioned OECD, innovation means a synthesis of several activities such as implementation of a new or improved product or

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<sup>49</sup> P. Kotler, *Marketing Management: Analysis, Planning, and Control*, Prentice-Hall, Englewood Cliffs 1967, p. 322.

<sup>50</sup> E.M. Rogers, *Communication of innovations: a cross-cultural approach*, New York, Free Press, London 2003.

<sup>51</sup> Compare W. Janasz, K. Koziół, *Determinanty działalności innowacyjnej przedsiębiorstw*, PWE, Warszawa 2007, p. 16.

<sup>52</sup> I.K. Hajduk, W.M. Grudzewski, *Systemy zarządzania wiedzą – nowy paradygmat czy wyzwanie?*, [in:] *Przedsiębiorstwo przyszłości. Fikcja i rzeczywistość*, Orgmasz, Warszawa 2004, p. 19.



process, a new marketing method or a new organisational method in business practice, workplace organisation or external relations with the environment.

- In accordance with the Act of 29th July 2005 about certain forms of support for innovative activities, innovative activity is the preparation and launching of production of new or improved materials, products, machines, services, processes or methods dedicated to implementation to the market or application in practice.

**Box 5.** Marketing innovation

**Marketing innovation** is the implementation of a new marketing method involving significant changes in the field of: **1) product design** – change of appearance of products which does not lead to any change in functional or utility features; it also includes changes in packages of, for example, food products where the package is a major determinant of the appearance of a product as well as introduction of significant changes in the form or taste of food in order to acquire a new segment of customers; **2) distribution of products** – introduction of new sales channels; however, it does not refer to logistics activities; a good example of such changes is first introduction of a franchise system or direct sales system or the introduction of licensed products; **3) promotion of products** – application of new concepts of product and service promotion; examples of such innovations are the first uses of different media or techniques such as product placement in television programs or product endorsement (presentation of a famous person as a user of a given product), branding, which means creation and introduction of a completely new symbol of brand for positioning of a product on a new market or giving it a completely new image; **4) pricing** – application of new pricing strategies in sales; for example the first use of a new method of adjustment of price of a given product or service according to the demand (i.e. when the demand is too low, the price is also low) or allowing customers firstly setup desired features on the company's website and then checking prices of the chosen combination of features. What differs marketing innovations from other changes in the range of marketing instruments is that they rely on implementation of marketing method which has not been used by a given company yet<sup>53</sup>.

Source: own work based on: [www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo](http://www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/podrecznik-oslo) [accessed: 14.03.2014].

<sup>53</sup> Ibidem, pp. 52–53.