

TOWARDS CHANGE – FROM CLASSICAL TO CONTEMPORARY APPROACHES AND CLASSIFICATION OF INNOVATION

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Purpose: The aim of this paper is to capture the changes taking place in terms of capturing innovations, as well as the types of innovations emerging from them, characteristic of two research streams: classical and contemporary.

Design/methodology/approach: The methodology applied in the article refers to the methodological canon of management sciences, including, among others, conceptual-theoretical research methodology. On their basis, a critical analysis of foreign and Polish literature on the subject in the field of management science, partly marketing and economics, was carried out. At the same time, a descriptive method and a comparative method were used to interpret and analyze the collected material.

Findings: Significant changes taking place in the definition and classification of innovations by selected representatives of the studied currents were recognized. Significant factors causing these changes were identified, as well as the new values that appear in them. On this basis, it was shown that the understanding of innovation is significantly expanded over the years, because of which it should be considered incomplete. This justifies the continuing need to analyze emerging approaches and types of innovation.

Research limitations/implications: The analysis of the subject matter in the proposed methodological approach makes it possible to systematize the knowledge of innovation in terms of defining the category "innovation" and its typology. Thus, it increases the recognition of the changes that accompany them. The important role of the factor of time, environment, information technology, values, and new needs of the recipients of innovations in the studied process is recognized.

Originality/value: Deepening and updating the knowledge of defining categories of innovation and their classification. Evaluation of progressive changes in the scope of the concepts studied.

Keywords: innovation, change, development, classifications of innovation.

Category of the paper: A literature review.

1. Introduction

Issues related to the development and creation of innovations have for years been an important topic covered in both domestic and foreign scientific journalism, in which various aspects of innovation are discussed. One of them is undoubtedly the evolution of changes that are taking place in the process of interpreting and understanding the category of innovation. This evolution, as indicated by the considerations of many authors (among others: Talukder, 2014; Borowiecki, Dziura, 2016; Dieter, Schmitt, 2018; Ober, 2022) is an expression of a broader process of change associated with the transition from an industrial economy to a knowledge-based economy. Within them, two defining trends can be distinguished: classical and contemporary (Arnason, 2015; Chen, 2023). Hence, capturing the changes taking place in terms of framing innovation, as well as the emerging types of innovation characteristic of the two research currents was made the main objective of the study.

The rationale for considering the question of interpretation and typology of innovations stems primarily from two facts. First, innovations occupy an important place in the economy, contributing to the growth of competitiveness, which is undoubtedly their asset and the cause of development (Zastempowski, 2014; Borowiecki, Dziura, 2016). The second premise of a scientific nature stems from the fact that several studies on innovation can be found in the literature, but the aspect linking the modern with the classical definition of innovation requires continuous learning and consolidation of the knowledge derived from it. The significant dissimilarity of the classical and modern notion of innovation is pointed out, among others, by Żabiński (2013), Tidd and Bassant (2005), O'Sullivan and Dooley (2009), Prahalad and Krishnan (2012) and Dieter and Schmitt (2018). Confirmation of the above problem is the dissimilarity of definitional approaches in the literature. The issue addressed is reflected in the title of the study.

2. Theoretical Background

Based on a review of the scientific literature, important concepts for the research area were analyzed. Their problem scope includes various approaches and classifications of innovation as important for the development of science and business practices.

2.1. The Classical Current and its Defining Approaches

Referring to the classical trend, it is worth starting with an analysis of the colloquial understanding of innovation. The literature states that the term means something new and different from existing solutions, which is generally associated with a needed change for the

better. The concept of innovation was first introduced into the literature of economic science in 1911 by J. Schumpeter, seeing it as a source of economic development.

This author made important contributions to the development of innovation theory in the 20th century. In his reflections, he focused on explaining and emphasizing the functional role of innovation (including entrepreneurship). Relating innovation to five areas, as shown in Table 1.

Table 1.
Capturing innovation according to J. Schumpeter

Innovation area	Importance innovation
New product	Innovation means introducing a new product that consumers have not yet encountered or giving new features to a product.
New production method	Innovation means the introduction of a new method of production, not yet tried in a particular industry.
New market	Innovation is the opening of a new market, i.e., one in which a particular type of domestic industry has not previously operated, regardless of whether the market existed before or not.
New source of raw materials	Innovation is the acquisition of a new source of raw materials or semi-finished products regardless of whether that source already existed or had yet to be created.
New structure of the organization	Innovation refers to the introduction of a new structure for the organization of some industry, such as the creation of a monopoly or the breaking of a monopoly.

Source: Schumpeter, 1960, p. 104.

The approaches to innovation presented above, due to the very broad spectrum of analysis, have been significantly modified over the years. As a result, the object scope of the classical concept of innovation has expanded, mainly due to the intensive development of services (1980s and 1990s), but also the development of marketing, and yet another (new) approach to management, including organization (Dieter, Schmitt, 2018).

Significant achievements in the above regard should be attributed to the modern pioneer of the study of innovation and entrepreneurial processes, P.F. Drucker. This author defines innovation in demand terms "as a change in the value and satisfaction of consumer needs, through the use of certain resources" (Drucker, 1992, p. 42). They are also a change in the process by which people work and produce something. Successful entrepreneurs (regardless of their individual situation) seek to create value, that is, to make a specific contribution. However, they are not satisfied with mere modifications, so they try to create thereby new and different values, new and different ways of satisfying needs, transform a material into a resource or combine existing resources into a new, more efficient configuration of them. In the accepted logic, innovation is more of an economic or social concept than a technical one. Hence P. Drucker (1992) introduced into professional terminology the concept of so-called systemic innovation, which consists of a deliberate and organized search for change and a systematic analysis of the opportunities for social or economic innovation that such change could enable.

R. Rothwell (1990) on the other hand, analyzes innovation by defining five generations of the innovation model, distinguishing between the technology-pushed model, the market-pulled model, the combined model, the integrated, parallel model and the integrated, network model. The approach used reflects the evolution of changes in defining the concept under analysis, also pointed out by D. O'Sullivan and L. Dooley (2009) showing that these changes, were in market economies after World War II in successive periods "pushed" by technology, "pulled" by the market, shaped by both of these stimulators combined, dynamized over time in the process of progressive globalization, and crossed the boundaries of innovator companies to ensure innovation success. Instead, over time, they have come to rely on knowledge retrieved and adapted to the distributed economic and social networks in which modern innovative companies increasingly operate (Putri, Rumamby, Mercia, 2018).

A large contribution to the development of the studied concept was made by the representative of management and competition sciences M.E. Porter (2001, p. 23) who in his definition of innovation emphasizes its competitive nature, defining it as: "the economically successful exploitation of new ideas". In this approach, in addition to fundamentally new products and processes that are new to industry or commerce, innovation also includes simple modifications that are new to individual companies.

In turn, according to R.U. Ayres (1987, p. 350) pointing to the economic aspect of the issue at hand, innovation should be understood as: "creativity, involving the production of new products, new technological processes, as well as the organization of a new enterprise. Coinciding with this view is the position of H.G. Barnett (1985), who in defining innovation emphasizes originality, a significant difference from existing solutions, while emphasizing the importance of innovation in the changes taking place in the economy.

In the area of Polish literature on the subject, changes in the perception of innovation and innovative activities of enterprises were introduced only by the systemic transformation. As a result of its processes in the economy, the economic aspect of innovation came to the fore (as in the case of foreign researchers), and the technical aspect receded into the background.

Among the Polish representatives of the above trend, it is worth mentioning, among others: S. Marciniak, I. Hejduk, W. Grudzewski, A. Pomykalski and S. Gomułka, although it should be emphasized that this group is formed by a much broader group of researchers who have contributed to the development of classical approaches to innovation. The cited authors, like foreign representatives of the analyzed trend, make various attempts to interpret the concept of innovation, as shown in Figure 1.

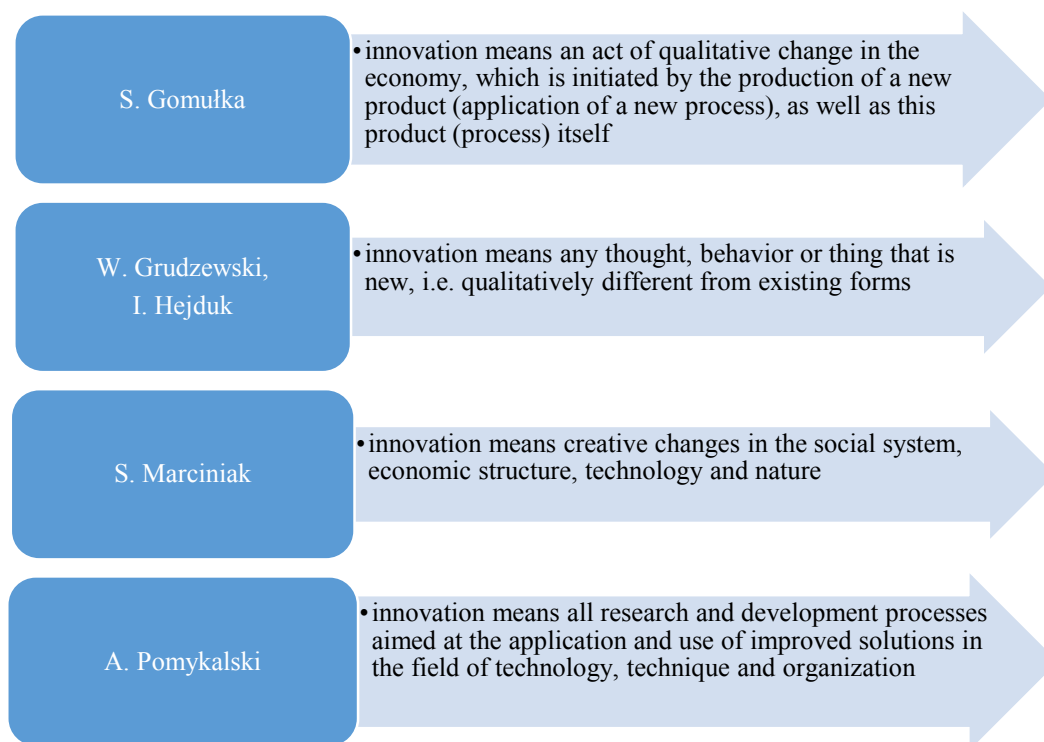


Figure 1. The concept of innovation according to selected Polish representatives of the literature on the subject.

Source: elaboration based on Gomułka (1998, pp. 17-20); Grudzewski, Hejduk (2000, pp. 138-140); Marciniak (2000, pp. 11-18); Pomykałski (2001, p. 17).

In addition to the above-mentioned authors, an original approach to the definition of innovation is expressed by the excellent Polish historian Professor Gerard Labuda (2008, p. 561), according to whom the history of civilization is the history of innovation. According to him, every innovation arises and develops in three stages. First, an idea or project, i.e., invention, is born in the head of the creator, then from the realized idea a work or deed is created, i.e., innovation in the strict sense. Finally, when the work finds recognition among the public, it is disseminated, imitated, reproduced, and applied in social practice. On this basis, we note that Prof. Labuda's reflections connect the history of civilization with the theory of innovation, which was presented much earlier by J. Schumpeter (1960, p. 64.), already mentioned in the introduction. This author was the first to recognize the need to analyze innovation through the prism of the above-mentioned stages of action, which are: invention - innovation - imitation.

It is worth noting that the definition of G. Labuda has several important advantages. First, it treats thinking about innovation in a broad context, showing that innovation is a feature of social reality in all its dimensions (i.e., technical, organizational, cultural, and political). Second, it reveals the complex, systemic nature of the innovation process, each stage of which requires separate analysis. With this view, many modern researchers of the concept of innovation agree.

The above definition strand focuses primarily on issues related to the development of production resources. To transform innovations into products and market activities is to start something completely new, to undertake a complex activity with a high degree of risk and uncertainty. Innovation in business includes products and services and activities to bring them to buyers and convince them of their usefulness.

2.2. Contemporary Current – Key Approaches to Innovation and their Basis for Classification

The modern understanding of innovation, in addition to the general statement that it is the result of something new, points to the important aspect of obtaining the benefits it provides to both companies, consumers and the economy (Szatkowski, 2016).

A significant contribution to the current of contemporary views on innovation, is made by C.K. Prahalad and M. Krishnan (2012), among others, who define it as: "shaping consumers" expectations, but also continuously responding to their changing demands, behaviors and experiences (even a single one and often with his participation, according to the $N = 1$ rule). According to the cited authors, one must innovate by reaching for the best talent and resources available anywhere in the world (according to the $R = G$ principle), that is, the resources of the many to meet the needs of the individual. The glue of these two pillars of innovation is flexible and resilient business processes (based on data analysis), and the foundations of the so-called "new edifice of innovation" (in the new era of innovation) are the technical architecture of the company (information technology) and the social architecture of the company (appropriate qualifications, attitudes and orientations of managers, organizational structure, ways of measuring performance, training, qualifications and value of the organization). From the definition presented, it follows that the development of innovation depends on the formation of consumer expectations, as well as the continuous response to changing consumer demands, behaviors and experiences, and the processes that accompany them. Innovation understood in this way can be analyzed through the complexity of the changes generated by it, as shown in Figure 2.

The types of innovations outlined above depend on changes in the business environment, which are triggered by the needs and behavior of modern consumers. Therefore, their implementation should be the result of a study of the environment in which certain market players operate. The division of these innovations therefore requires the identification of factors that shape the environment of companies from the point of view of the needs of their target markets. The problem of the needs and expectations of consumers as recipients of innovations is strongly emphasized sometimes in the marketing literature.

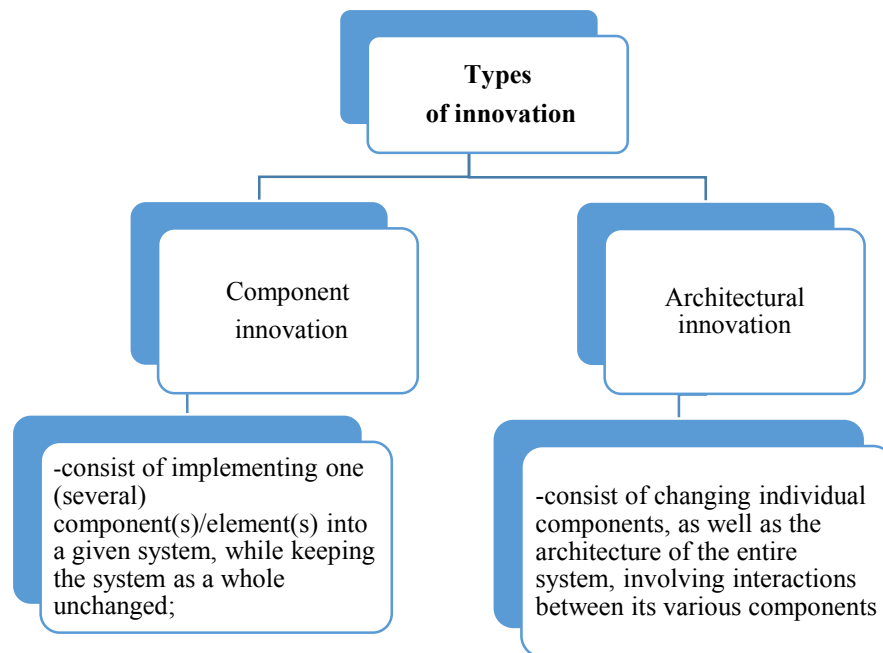


Figure 2. Types of innovations based on the criterion of comprehensiveness of changes generated by innovation.

Source: elaboration based on Child, Faulkner and Tallman (2005, pp. 186-189).

A prominent representative of the above approach to innovation is Ph. Kotler (2004), who points out the vital importance of the subjective aspect and the resource trend related to the market. On this basis, together with F. Trias de Bes (2004) he states that innovation is created by the market. This is because within its mechanisms, both actual and potential consumer needs are met. In addition, the market creates new consumer expectations and needs. These expectations are a resource that can turn into an innovation idea, and its successful implementation can determine the success of a company. This approach describes the concept of vertical and lateral marketing.

According to the first concept mentioned, that of vertical marketing, the search for innovation within the market in which the company operates requires the exclusion of solutions that go beyond the company's market. Therefore, the selection of opportunities is done by restriction. The resulting innovations do not create new product categories or new technologies, as they always occur within the category in which the product idea originated. According to lateral marketing, on the other hand, innovations generated within it fall outside a specific product category or market, leading to the creation of a new product category or market. As a result, the chosen product transforms sufficiently to be able to meet new needs or the needs of new customers.

A continuation of the above considerations is Ph. Kotler's concept 3.0, developed jointly with H. Kartajayna and I. Setiawan (2010) in which the authors also emphasize the importance of the subjective aspect and the resource trend related to the market.

W. Chan Kim and R. Mauborgne (2005) on the other hand, try at an integral view, introducing the concept of value innovation, which is the basis for building strategies that allow modern companies to achieve above-average profits. This concept is in part a complement to earlier approaches, but it does so in a way that differs significantly from other approaches to innovation found in the literature.

In recent years, it can be noted that the creation of innovations that generate value for companies depends largely on knowledge (intellectual capital), which should be skillfully used (Borowiecki, Dziura, 2016; Skrzypek, 2020; Usman, Fadhilah, 2020). The acquired knowledge of the market, is based on the resources of modern technologies, being an important source of creation and creation of innovations in various sectors of the economy. This aspect is also pointed out by Polish representatives of the contemporary trend, such as G. Gierszewska (2017), J. Baruk (2020) and W. Dyduch (2021).

In addition to market knowledge, the time factor, the level of development of the economy, and the progress brought about largely by modern technologies are important in new approaches to innovation. The aforementioned factors determine the development of innovation highlighted by another group of representatives of the modern trend, who emphasize the aspect of novelty in their definitional approaches (Anderson Potocnik, Zhou, 2016; Styś, Dejnaka, 2018; Ober, 2022). On this basis, we can classify two types of innovations that form:

- a) imitative innovations (so-called secondary innovations), meaning adaptation to other markets and in other companies, the essence of which is captured by the slogan: "new for the company", "new for the market" (e.g., next-generation smart clothing for the medical services market).
- b) creative innovations (so-called primary innovations) - denoting the first worldwide commercialization of an innovation /inventor. Their essence is captured by the slogan: "new to the world" (e.g., the emergence of the Amazon shopping portal).

In a similar vein, innovations are analyzed by J. Tidd, J. Bessant and K. Pavit (2005), who reduce the problem of the degree of novelty to technology and the idea of the product, and distinguish three types of innovations, shown in Figure 3.

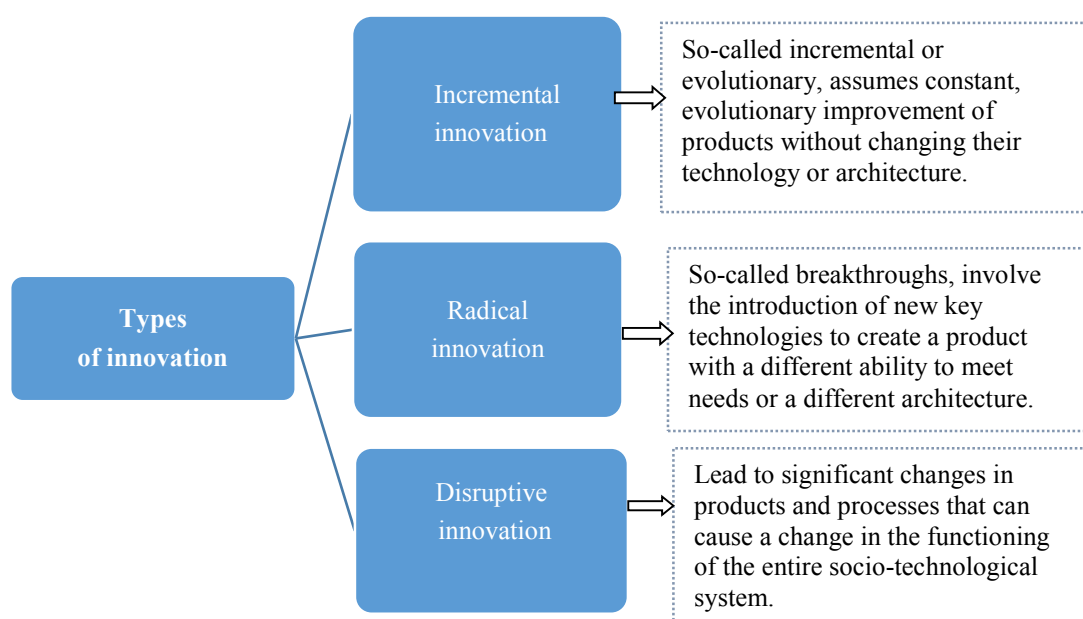


Figure 3. Division of innovations according to the degree of novelty of technology and product idea.

Source: elaboration based on Tidd, Bessant, Pavit (2005); Christensen et al. (2010).

Changes in the environment and new market challenges emerging in the last decade of the modern trend prompted a new version of the definition of innovation, published in the Oslo Manual (Oslo Manual, 2018) by the Organization for Economic Cooperation and Development OECD in 2018¹. According to its description, the previous complexity of the definition of innovation, has been significantly reduced. As a result of the changes, the 4 main types of innovation (product, process, organizational and marketing), classified by the Oslo Manual in 2005, have been reduced to only two types of innovation: product innovation and business process innovation (Oslo Manual, 2018, p. 3.25). The elaborated definition also reduced the ambiguity of the requirement for a "significant" change by comparing both new and improved innovations with a company's existing products or business processes (Oslo Manual, 2018, p. 3.36). Their essence is explained in Table 2.

¹ The Oslo methodology is the basis for innovation statistics surveys conducted under the auspices of the European Commission as part of the large-scale Community Innovation Survey (CIS) program, which is currently the main source of information on innovation activity in European countries (the data generated by the Community Innovation Survey program is one of the sources feeding the European Innovation Scoreboard, or EIS).

Table 2.*The essence of the meaning of innovation according to the Oslo Manual 2018*

Types of innovation	Definition and essence of innovation
Innovation Product	<ul style="list-style-type: none"> - "a new or improved product or service that differs significantly from the company's existing products or services and that has been introduced to the market"; - must provide a significant improvement in one or more characteristics or performance specifications; - considers the addition of new features or improvements to existing functions or user usability; - its functional characteristics include quality, technical specifications, reliability, durability, economy in use, affordability, convenience, usability, and user-friendliness; - does not necessarily involve improving all functions and performance specifications.
Innovation in the business process	<ul style="list-style-type: none"> - "a new or improved business process for one or more business functions that differs significantly from the company's existing business processes and that has been put into use by the company; - relates to six different management functions of the enterprise: two of them relate to the core business (manufacturing and delivering products for sale) the others relate to supporting activities (marketing, information and communication systems, administration and management, product development and business processes); - may arise from objectives related to implementing business strategies, reducing costs, improving product quality, or working conditions, or meeting regulatory requirements.

Source: elaboration based on Oslo Manual (2018, paragraphs 3.25; 3.36).

The types of innovations introduced by Oslo Manual 2018, despite the limitations imposed by their definitions, are distinguished by a much broader approach in which the use values of the product generated for customers, rather than its "technical" parameters as before, play a key role. This important aspect of analysis is also confirmed in the literature (Mahajan, 2020).

As a result of the changes introduced by the Oslo Manual 2018, the functional features of products and services are undoubtedly gaining in importance, enabling increased affordability, financial convenience and reduced manufacturing costs that translate into the final competitiveness of the enterprise, which is also confirmed in the subsequent period caused by the Covid-19 pandemic. Its effects verified the activities of modern enterprises, making innovation necessary to survive this difficult time. This is because it quickly became apparent that the existing environmental conditions not only give rise to threats for companies, but also opportunities to function in the conditions of the pandemic.

The above issue is addressed, among others, by K. Heinonen and T. Strandvik (2020), who show in their considerations that opportunities arising during the pandemic period can be a catalyst for innovation. This has led to an increase in creativity and the development of new types of survival-oriented innovations. They are now supported by digitization, automation, remote work, and new business models to overcome the problems of smooth operations by taking advantage of the unlimited.

The results of the research presented by W. Mierzejewska and P. Dziurski (2021) further show that innovations introduced during the pandemic period most often took the form of process and "open" innovations relying on the cooperation of entities in the R&D area and knowledge sharing. However, it should be added that the development of "open" innovations in Poland was already visible before the pandemic. An analysis of its status on, for example,

SMEs (Small and Medium Enterprises) was carried out and described, among others, by R. Borowiecki, T. Kusio and B. Siuta-Tokarska (2018)².

At the same time, it should be noted that the difficult time of the pandemic became a catalyst for technological change triggering the development of innovations, which were accelerated by the digitization of services and processes, online communication, and remote forms of service. In particular, the period saw the quick development of innovations related to ecology and health. Which indicates that in the existing environment, companies are trying to be more flexible, that is, prepared for change, quickly adapting, and adjusting to new conditions. This is in line with the common statement that necessity is the mother of invention. Observed innovations during this period are primarily aimed at providing its recipients with security, comfort, time savings, while supporting the development of business and partner relationships.

Guided by the conviction that it is the factor of time and the environment, combined with the parallel development of potential and access to modern information technologies, that condition the development of modern approaches and typologies of innovation, it should be stated, following J. Tidd (2021, p.6) that there is no single ideal recipe for the development of a particular type of innovation. Indeed, what is needed in difficult times for all is the search for different combinations or configurations of solutions that best fit the nature of the problem and the given environment.

3. Conclusions

The considerations presented in the paper indicate the evolutionary nature of the development of both classical and modern approaches to the categories of innovation and related typologies. This evolution, in turn, reflects the significant changes that have occurred in the interpretation of categories and types of innovation. From the definitions and typologies of innovation presented, it is clear that their subject matter is so broad as to give them a complex and difficult to evaluate character.

The definitions and classifications of innovations that emerge over time are created in relation to the changing environment, including the processes of socio-economic development and the new values emerging in them, as well as new information technologies. Hence, it is extremely important to follow both the scientific achievements developed by prominent theorists (classics) of the analyzed field of management, as well as current developments in the current post-state reality.

² The basic premise of these innovation is that the added value for the customer is co-created by the customer together with the company. The customer becomes at the same time a co-producer of the final product, whereby the co-creation of value is not only reduced to the customization of the product at the final stage of the process of its delivery to the customer but begins already at the stage of product design.

The analysis carried out allows us to formulate the following conclusions:

- in the case of classical approaches, the so-called "closed" innovation dominates, which means that it arises only inside a specific company - so inventions, products, technologies are developed by a specific group of people in a company or research and development institution, and the knowledge about them does not go beyond a particular company;
- "closed" innovations are characteristic of large companies with a strong competitive advantage and a strong market position, as well as companies operating in niche industries that use rarely available and severely limited resources;
- in the case of the modern trend, innovations occur both inside and outside the company, often creating "open" innovations - with this approach, both technologies, processes and products created in this way are better tailored to the needs of customers, evolve more easily and quickly in response to the dynamics of change in the world. Thus, they are much more profitable for companies that are willing to share their knowledge with the environment, leading to more innovative products than is possible under "closed" processes;
- phenomena associated with the development of new types of innovations indicate that companies are significantly active in the direction of increasing their adaptability to new environmental conditions - this approach is due to the development of desirable innovations and the changes taking place in their structure, which provide a solution to overcoming the crisis caused by the pandemic;
- among the "open" innovations, a model of marketing-driven and user (consumer) driven innovation is emerging, based on a proper understanding of the user's needs and consistent involvement of the user in innovation activities.

A comprehensive approach to the analysis of the essence of innovation and its conceptual scope, made it possible to see the changes that have occurred over time within the interpretation and understanding of innovation and their impact on the development of the classifications encountered in the literature. The identified changes are a derivative of certain conditions related primarily to the time factor, IT advances, access to knowledge, evolving concepts of value, an environment that is difficult to predict, and the increasingly exorbitant needs and expectations of innovation recipients.

The considerations presented in the article should be regarded as a voice in the discussion of the problem of changes occurring within the interpretation and typology of innovations observed over time.

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