

## CO-OPERATION BETWEEN POLISH ENTERPRISES WITHIN THE SCOPE OF INNOVATION-FOCUSED ACTIVITIES IN 2017-2019

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**Objective:** the authors' main objective was to analyse, on the basis of other publications on the subject, the merits, the stages and the reasons for which enterprises establish innovation-driven relationships, as well as to present the results of an empirical study showing the condition and scope of co-operation between Polish enterprises within the scope of innovation-related activities in the years 2017-2019.

**Project/methodology/approach:** The results of the empirical study presented in the paper have been taken from a statistical analysis by the Central Statistical Office titled: "Innovative activities of enterprises in the years 2017-2019", GUS (Central Statistical Office), Warsaw-Szczecin 2020. The study covering industrial and service enterprises was carried out in the years 2017-2019, and its results were published in 2020. The study applied the methodology developed by Eurostat and OECD described in the Oslo Manual (Oslo Manual, 2008).

**Findings:** the paper and its summary discuss the main findings from the and the results of the empirical study conducted.

**Originality/value:** the paper presents the latest data published by the Central Statistical Office, which are the results of studies innovation-focused activities of Polish enterprises as part of innovation-driven co-operation (relationships). The paper is addressed chiefly to industrial and service enterprises.

**Keywords:** innovation-driven relationships between enterprises, innovation-focused co-operation and activities, clusters.

**Category of text:** research paper.

## 1. Merit and features of innovation-driven relationships

Academic papers usually claim that “innovativeness”, understood as the ability to create, implement and absorb innovations, which involves active engagement in actions enhancing this ability, should be a fundamental characteristic of every enterprise that wants to effectively compete in the market. According to R. A. D’Aveni, the ability to continuously develop new products and processes, and to improve the way of functioning in the market is the critical success factor for an enterprise (D’Aveni, 1994, pp. 217-218).

Analysis of economic phenomena shows that the critical feature of enterprises capable of creating innovative solutions is establishing contacts within their market that allow them to fill in their resource gaps, which favours the development of innovative ideas (Sudolska, 2011, p. 79). In situations where the purpose of a specific co-operative arrangement is to improve the innovative skills of these enterprises, the relationship established between the partners can be described as an innovation-driven relationship. Thus, interorganisational innovation-driven relationships are such relationships that, by definition, should increase the innovativeness of the co-operating enterprises (Sudolska, 2011, p. 79). It means that the main reason for establishing such relationships is the fact that such enterprises strive to create innovations.

Interorganisational innovation-driven relationships are highly complex co-operative arrangements. They can be established even between market rivals as well as between enterprises that do not compete with each other. They can also assume various organisational forms.

Sustainable and successful co-operative arrangements between enterprises are characterised by certain features:

- They are strategic by nature. This means that established, well-fostered relationships and their potential benefits play a significant role in the strategy adopted by a given enterprise.
- By definition, such relationships are long-term, which results from the strategic nature of the co-operation. These co-operative relationships may often turn out to be profitable only in the long-term perspective. What is more, the awareness that the relationship is designed to be long-term strengthens the co-operation between partners.
- Another feature of innovation-driven relationships resulting from their strategic and long-term nature is the interdependence between parties, which strengthens their involvement in the pursuit of common goals. The interdependence between enterprises is related to their commitment to maintain the relationship in order to meet desired goals that otherwise would be unachievable. The crucial feature of innovation-driven relationships, focused on exchanging or jointly generating new know-how by partnering enterprises, is their pursuit to stimulate their capability for creating innovations within this relationship.

- Another feature of innovation-driven relationships is their dynamic nature resulting from continuous development of new technologies, ever shorter product lifecycles and growing market competition.

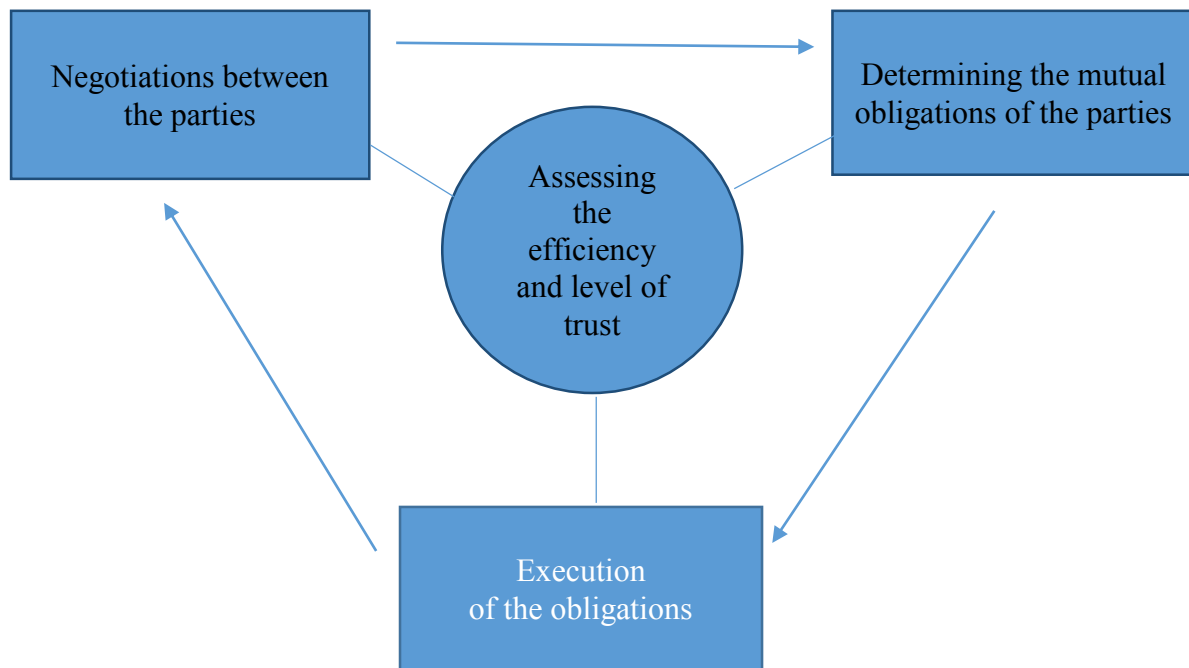
It must be therefore stated, after A. Sudolska, that innovation-driven relationships oriented towards the creation of innovations are the response to today's market imperative for fast action (Sudolska, 2011, p. 82).

## **2. The process and stages of building innovation-driven relationships**

Building innovation-driven relationships can often be a lengthy process. The process of building a co-operative relationship between two enterprises can be divided into two phases. The phase of establishing a relationship and the phase of its development. The first phase includes actions such as: potential partners getting to know each other, entering into negotiations before establishing co-operation, implementing the relationship, i.e. commencing and undertaking joint activities. The second phase starts when partners, having implemented their relationship, are satisfied with its effects and want to maintain it.

The related publications present different models describing the process of shaping and developing trust in relationships between enterprises (e.g. Doney, 1997; Cannon, pp. 36-39; Ganesan, 1994, pp. 4-7; Morgan, Hunt, 1994, pp. 20-24; Światowiec, 2006, p. 141). These models often involve a number of stages. A detailed description of stages comprising such a complex model is presented in A. Sudolska's publication (Sudolska, 2011, pp. 90-98).

An example of a less complex model is the model developed by P.R. Ring and A.H. Van de Ven (Ring, Van de Ven, 1994, p. 97), presenting the process of evaluating a relationship as a repetitive sequence of three main stages: negotiations, the stage of determining the obligations of partners, adopting a method for coordinating and controlling activities as part of a specific relationship, and the stage of the execution of these activities. Throughout the relationship, the parties carry out a subjective assessment of these stages. This process has been presented in Figure 1.



**Figure 1.** Relationship as a cycle of repetitive stages. Source: Own study based on: Child, Faulkner, Tallman, 2005, p. 404, as cited in A. Sudolska, 2011, p. 99.

- The first stage of this process are negotiations between the co-operating parties, which includes: developing joint goals and expectations, assessment of risks resulting from joint activities and specifying the level of mutual trust.
- The stage for defining mutual obligations. Establishing clear guidelines in the form of operating procedures for actions, controls and standards of conduct.
- The obligations execution stage. This stage includes actions aimed at the completion of jointly agreed tasks.

These stages are frequently repeated over time. The final stage of a relationship can assume various forms (Murray, Mahon, 1993, pp. 102-111). Three variants may be possible:

- the co-operation is successful, co-operating parties are satisfied, the partners are willing to sign another agreement on joint activities,
- the parties to the relationship end their co-operation and part ways amicably,
- the co-operating parties are hostile to each other, which prevents any further co-operation.

It should always be borne in mind that the fundamental purpose of establishing a relationship is the partners' intention to achieve more than they would achieve on their own, i.e. to achieve synergies.

### 3. Reasons why enterprises establish innovation-driven relationships

There are several reasons why enterprises establish innovation-driven relationships. The first and the most important one is the aim to **make the enterprise more innovative**. High innovativeness is considered a pre-condition for making the enterprise highly competitive. As worldwide studies carried out by the A.D. Little consulting firm show, innovative enterprises grow by several per cent faster and achieve 6-times higher operating profit than the average for their industry (Little, 2007). That is why fast-growing enterprises make it their priority to increase efficiency and effectiveness in the area of innovative activities.

Another factor that motivates enterprises to build interorganisational relationships in the market is their **commitment to learn and continuously improve their market offers** as a consequence of growth (Olivier, 1990, p. 242; Osborn, Hagedoorn, 1997, p. 266). Studies show that the enterprises' ability to generate and absorb know-how has a positive effect on other competences, and it contributes in particular to the development of their innovativeness (Hagedoorn, 1993, p. 373). For many enterprises, building market relationships with other organisations is a way to obtain and develop their know-how and skills resources. Yet another reason that prompts enterprises to establish and develop relationships for the purpose of learning is the cost that the enterprise would have to incur if it wanted to obtain this know-how or skills on its own.

Another important reason to start innovation-driven relationships is the enterprise's **willingness to eliminate the resource gap**. Enterprises that compete with each other may have different resources at their disposal, which may cause significant differences in the economic benefits they achieve. The consequence of this phenomenon is the differentiation between enterprises in terms of opportunities related to competitive advantage. In most cases, an enterprise is not perfect and does not possess all the resources necessary to meet its goals. The most common way to fill in a resource gap and acquire resources is to purchase them. However, it is not always possible, for instance in the case of intangible resources. Another way to fill in a resource gap is to undertake creative activities in the environment where specific relationships with other entities exist.

**Willingness to improve efficiency of operations** is instrumental for the process of establishing innovation-driven relationships between enterprises. In this significant decision-making area, enterprises also take efficiency-related goals into account. In accordance with this rule, the effect of joint activities anticipated by the parties should be related to a reduction of costs associated with these joint activities and/or an increase in value generated as a result of the relationship (Sudolska, 2011, p. 141). In instances where co-operation is established by entities, this results in synergies. It is a consequence of the fact that a large portion of the costs related to the performance of a specific task are borne jointly by both parties to the relationship. The reduction of costs is the result of economies of scale and scope (Czakon, 2007, p. 94).

Finally, the last factor stimulating the establishment of innovation-driven relationships is **the growing uncertainty and unpredictability with regard to changes in the business environment**. Globalisation processes which impact the economy for many years now have profoundly affected the business environment. The environment of today is plagued by increasing and multifaceted uncertainty which results from the tempo, scope and swiftness of the changes taking place in the global economy. As a result of these changes, patterns, strategies and operating methods developed by enterprises previously do not work anymore (Kozłowski, 2004, p. 7). Establishing and developing an arrangement of co-operative relationships between enterprises in the market is an expression of their willingness to mitigate risks resulting from uncertain business environment. A developed arrangement of relationships with other entities gives enterprises new strategic possibilities. It is also their way of increasing their anticipatory capabilities and competitiveness (Sudolska, 2011, p. 155).

#### **4. Methodology of the empirical study**

Innovations implemented in an enterprise help them gain a competitive advantage and thereby achieve potential market success. They are the foundation of economic growth. Implementing innovations requires enterprises to undertake efficient activities over a certain period of time and considerable financial outlays. The results of the empirical study presented in the paper have been taken from a statistical analysis by the Central Statistical Office entitled: “Innovative activities of enterprises in the years 2017-2019”, GUS (Central Statistical Office), Warsaw-Szczecin 2020. The study covering industrial and service enterprises was carried out in the years 2017-2019, and its results were published in 2020. The study used methodology developed by Eurostat and OECD (*Organisation for Economic Co-operation and Development*), presented in the Oslo Manual (Oslo Manual, 2008).

As mentioned previously, co-operation with other entities in the area of innovation-focused activities is a significant element of any enterprise’s operations. It provides broader access to know-how and new technologies. It allows enterprises to reduce the cost and risk of business operations and promotes the exchange of experience and know-how.

Co-operation in innovation-focused activities involves engagement in joint projects developed with other enterprises or non-commercial institutions. Such a co-operation can be prospective and long-term, and does not have generate direct, measurable economic benefits for the partners involved.

Commissioning works with third-party contractors without taking an active role in their execution should not be considered co-operation in innovation-focused activities.

In the research on innovation-focused activities, the Oslo Manual lists the following types of partner institutions:

- enterprises from the same group of enterprises,
- enterprises from outside the same group of enterprises, including: consulting companies (consultants), commercial laboratories, private research institutes and academic institutions, suppliers of equipment, materials, components or software, customers, competitors, other enterprises,
- academic institutions,
- public research institutes (including research institutes of the Polish Academy of Sciences),
- public sector entities (government and local administration bodies – such as government bodies, organisations and agencies – public schools, educational institutions, academic institutions, healthcare centres and other units providing public services),
- non-profit organisations.

The study of innovation-focused activities covered industrial and service enterprises. The entities covered by the study were selected on the basis of the Polish Classification of Activities (PCA) 2007, compliant with the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2).

The study of innovation-focused activities, carried out using the PNT-02 form, covered enterprises with more than 9 employees. In 2019, the study was carried out in the industry sector on a full population of enterprises with 50 employees or more, and on a representative sample of enterprises with 10-49 employees, representing approx. 25% of the sampling frame. The sampling frame was prepared on the basis of the personal scope defined above. The sample might include enterprises representing narrow ranges, as this later ensures that the results will be representative for these ranges as well. The remaining part of the sample was allocated within ranges by sections of the Polish Classification of Activities and by provinces. The sample was allocated using of the results of the previous study, which allows for estimating variances of the most important features in the defined ranges. Estimation of variances for the most important features is carried out using standard statistical procedures, i.e. data from a study completed the previous year makes it possible to estimate variances of a specific feature in the studied population (taking weights into account). The volumes so determined are used to perform an optimum allocation of the sample for the purpose of a new study; as a result, a larger sample will be allocated within ranges with higher variability of the feature, which allows the consecutive year's study to be more precise. Such an approach is effective provided that the distributions of studied features are similar in successive years. On the basis of a selected allocation, a drawing of a sample part is carried out according to a simple random sampling scheme, without replacement, in each studied range independently.

## 5. Co-operation in innovation-focused activities – selected results of the study

In the years 2017-2019, 23.4% of innovation-active industrial enterprises and 18.5% of service enterprises co-operated as part of innovation-focused activities (2.0 percentage points and 1.1 percentage point less than in the years 2016-2018 respectively). The share of large industrial or service enterprises (with at least 250 employees) that co-operated in innovation-focused activities was higher than in the case of enterprises of other sizes.

**Table 1.**

*Innovation-active enterprises which co-operated in innovation-focused activities in the years 2017-2019 by number of persons employed*

Specification	Industrial enterprises	Service enterprises
	In % of innovation active enterprises	
TOTAL	23.4	18.5
10-49 persons	15.4	16.3
50-249 persons	24.3	21.7
250 persons and more	43.4	25.8

Source: Innovative activity of enterprises in the years 2017-2019, GUS (Central Statistical Office), Warsaw-Szczecin, 2020.

Taking the sections of the Polish Classification of Activities into account, co-operation in innovation-focused activities in 2017–2019 among innovation-active enterprises was most frequently pursued, within the Processing industry sector, by enterprises representing the *Manufacture of coke and refined petroleum products* category (44.4%) and, within the services sector, by entities from the *Research and experimental development* category (59.7%).

Taking the territorial division of the country into account, the highest share of innovation-active industrial enterprises that co-operated in innovation-focused activities in 2017-2019 was in the Lubelskie (29.2%) and the Śląskie Province (28.2%), whereas the lowest share was in the Warmińsko-Mazurskie (13.7%) and the Zachodniopomorskie Province (18.9%). In the service sector, the largest number of such enterprises was in the Podkarpackie (39.7%) and the Łódzkie Province (31.8%), while the lowest number was in the Zachodniopomorskie (2.7%) and the Wielkopolskie Province (7.4%).

In the Processing industry sector, co-operation in innovation-focused activities in 2017-2019 among innovation-active enterprises classified according to technology level was most frequently pursued by high-tech enterprises (33.9%) and least frequently by low-tech enterprises (14.6%).

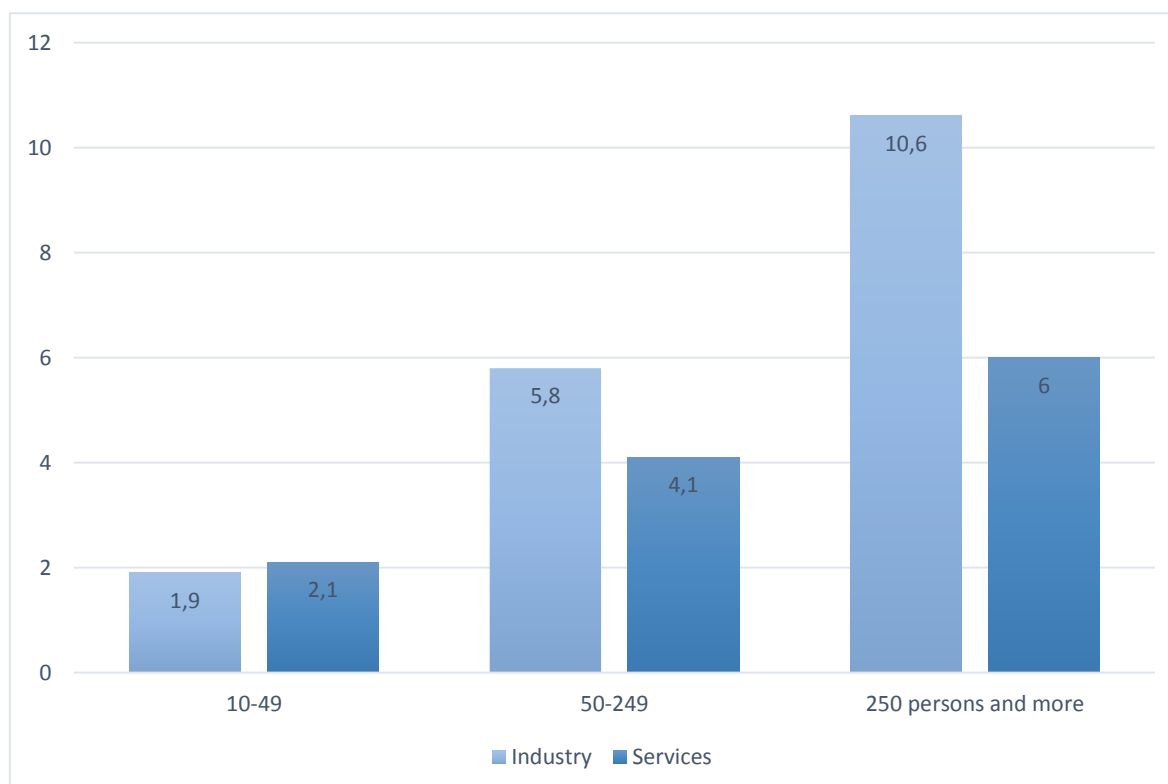
Innovation-active enterprises that co-operated in terms of innovation-focused activities in 2017–2019 most frequently partnered with enterprises from outside their own groups of enterprises from Poland and with Polish academic institutions. In the industry sector, 67.6% and 55.6% of enterprises respectively declared their co-operation with these partners, whereas in the services sector the relevant figures were 70.5% and 43.1%. In the industry sector,



taking partner institutions from all of the countries into account, enterprises least frequently co-operated with non-profit organisations. In the service sector, non-profit organisations were also least frequently indicated as partners in innovation-focused activities, but only with reference to partners from Poland and EU/EFTA member countries. Among other countries, units representing the public sector were least frequently selected for co-operation.

One of the forms of co-operation between enterprises is *cluster initiative*. According to a definition by M.E. Porter, a cluster is a geographical concentration of mutually connected enterprises, specialised suppliers, service-providing units, enterprises operating in related sectors and related institutions (e.g. universities, standardisation bodies, trade associations and financial institutions) in individual areas, competing and co-operating with each other. For the purposes of the study of innovativeness, a cluster initiative is understood as co-operative connections established formally in the form of a letter of intent, an association agreement, a consortium agreement etc.

In the years 2017-2019, the share of enterprises co-operating as part of a cluster initiative in the total number of entities was 3.2% for industrial enterprises and 2.5% for service enterprises. Among the entities that co-operated as part of a cluster initiative in 2017-2019, the highest share of industrial and service enterprises was among entities with at least 250 employees (figure 2).



**Figure 2.** Enterprises which participated in cluster co-operation in the years 2017-2019 by number of persons employed [%]. Source: Innovative activity of enterprises in 2017-2019, GUS (Central Statistical Office), Warsaw-Szczecin, 2020.

Taking the territorial division of the country into account, the highest share of industrial enterprises participating in cluster initiatives was in the Podkarpackie Province (7.7%) and the Podlaskie Province (5.8%), while the lowest share was in the Lubuskie Province (1.7%) and the Opolskie Province (1.8%). In the services sector, the highest share was in the Dolnośląskie Province (5.4%) and the Podkarpackie Province (3.9%), whereas no such co-operation occurred in the Opolskie Province.

In 2017-2019, enterprises from the Processing industry section which were most active in cluster initiatives were the enterprises representing the *Manufacture of coke and refined petroleum products* category (16.3% of enterprises had such relationships). In the service sector, enterprises representing the *Research and experimental development* section most frequently co-operated as part of clusters (21.2%).

Taking the technology level into account, the highest share of entities co-operating as part of clusters in the Processing industry section was among high-tech enterprises (8.6%), and the lowest share was among low-tech enterprises (1.2%).

In conclusion, the share of innovation-active enterprises that co-operated in innovation-focused activities in the years 2016-2018 **ranked Poland in one of the lowest positions in Europe**. In the industry sector, only one in four Polish innovation-active enterprises co-operated in innovation-focused activities in the studied period, and in the service sector only one in six enterprises undertook such co-operation.

## Summary and conclusions

The following conclusions can be drawn as part of the summary of this paper, where the main objective was to analyse, on the basis of the relevant publications, the merit, the stages and the reasons why enterprises establish innovation-driven relationships, and to present the results of an empirical study showing the co-operation between Polish enterprises in the context of innovation-related activities in the years 2017-2019.

- Innovation-driven relationships oriented towards co-operation and creation of innovations are a response to today's imperative for fast action.
- Industrial enterprises are more active in co-operating in the area of innovation-focused activities than service enterprises. Over the analysed period, 23.4% of innovation-active industrial enterprises and 18.5% of service enterprises were maintaining co-operative relationships.
- The share of innovation-active enterprises that co-operated in innovation-focused activities in the years 2016–2018 has ranked Poland in one of the lowest positions in Europe.

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