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## Cooperation between Domestic and Foreign Companies in the Field of Innovative Activities

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**Abstract:**

**Purpose:** The article's main objective was to try to identify the scale of influence of foreign companies operating in Poland on domestic entities in the sphere of technology and knowledge transfer, as well as to explain the influence and intensity of factors encouraging and discouraging the development of transnational cooperation.

**Design/Methodology/Approach:** This objective was achieved through a literature search, empirical research, and statistical modeling.

**Findings:** The research has shown that the lack of domestic capital significantly limits the possibilities of dynamizing the development of Polish enterprises and the Polish economy and that the sum of added values brought by the cooperation of domestic and foreign enterprises is an "injection" of innovation for them.

**Practical Implications:** The research results will also allow managers and other stakeholders to predict the entrepreneurial attitudes of both domestic and foreign companies in terms of their innovative cooperation.

**Originality/Value:** The article is an essential contribution to research development on the cooperation between Polish and foreign enterprises in technology, knowledge, and skills transfer. It allows us to understand the determinants of cooperation of the studied enterprises and provides a basis for future research.

**Keywords:** Cooperation, innovation, foreign direct investment.

**JEL classification:** F30, F50, F65.

**Paper Type:** Research study.

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## 1. Introduction

In the modern world, technology has become the "key" to innovation and the competitiveness of businesses. Investment in developing and disseminating new technologies was recognized as a driving force for economic growth many years ago. New technologies provide a wide range of benefits for businesses and open up new prospects for human activity. They accelerate more efficient working methods, initiate improvements in the quality of products/services and increase production efficiency, shorten the time to market, and, as a result, offer opportunities for increased competitiveness and business development. However, the scale of these benefits and their extent depends mainly on companies' innovation policies and the financial resources allocated to research and development activities.

An essential role in this respect is a foreign direct investment (FDI), which is carried out mainly by pro-innovative international companies. It should be stressed that the inflow of FDI is not limited to supplementing the internal accumulation of capital but brings with it such an essential transfer of technology and knowledge. There are several aspects to the importance of this process. Firstly, technology transfer increases the available production factors. Secondly, foreign technology contributes to economic growth by using existing resources. Finally, the transfer of foreign technology can significantly increase the productivity of existing production factors.

The above reflections gave rise to the central thesis of this article, which is that defective equipment of technology and knowledge of companies from less developed countries is a premise for seeking external sources of 'power' in the form of foreign direct investment through cooperation with foreign companies.

The study's main objective was to identify issues related to the scope and effects of cooperation between enterprises with foreign capital and domestic entities of foreign direct investments and to identify the scale of impact of foreign enterprises operating in Poland on domestic entities in the sphere of foreign enterprises technology and knowledge transfer. The research concept in question resulted from the assumption that there is a significant cognitive gap in the scope of getting to know the state and conditions of genuine economic cooperation between domestic and foreign enterprises. Reducing this gap may contribute to better control of the development of this cooperation and a more effective determination of future support for companies in the field of improving the ability to introduce innovations.

## 2. Literature Review

*Cooperation, its forms and motives:* The notion of "cooperation" is defined as the joint undertaking of activities by various entities, which may be individuals, their groups, or organizations (Mazur, 2011). Cooperation between companies occurs when companies work together to achieve a specific common goal. In such relationships, none of the companies can compete effectively without the constant support of other

partners (Albani and Dietz, 2009). Therefore, it can be concluded that cooperation requires the partners to solve the problem in a coordinated way, and the success of a project depends on the respective contribution of each partner (Kern, 2007). A further definition of cooperation describes it as "the coordinated, through established relationships, identical or complementary actions undertaken by enterprises to achieve the results desired by all stakeholders" (Anderson and Narus, 1990). Thus, cooperation is characterized by the partners' simultaneous pursuit of joint and individual objectives and the relationship's voluntary nature. This concomitant pursuit of different objectives by cooperating enterprises makes cooperative relations sometimes complicated.

The rationale for creating various cooperation agreements between companies can be both external forces and internal conditions of companies. According to David Faulkner and Cliff Bowman, there are specific external forces whose influence has contributed to the increase in the number of agreements concluded in recent years. They mention them as the most important (Faulkner and Bowman, 1999), the globalization of markets, rapid dissemination, and shortening of the life cycle of new technologies and products developing opportunities to achieve economies of scale, scope, and experience curve, the growing turbulence in the global economy.

In addition to external conditions, several internal conditions, of which it is the most common, can also be a stimulus for cooperation between enterprises: a sense of the inadequacy of resources or a sense of the inadequacy of the company's competitive characteristics. In such a situation, the agreement's creation enables the company to gain access to markets valuable to it, technologies, specialist skills, or raw materials that it lacks (Faulkner and Bowman, 1999). The internal conditions and changes in the external conditions in which enterprises operate force them to seek more effective forms of competition, which certainly include the creation of diverse cooperative ventures, as these include joint ventures, purchasing alliances, supplier-customer partnerships, R&D alliances, marketing coalitions, joint/licensed production, international strategic alliances, distribution alliances, technology exchange, joint search for raw materials, joint product development, mutual marketing, franchising, logistic alliances, supply chain integration, learning alliances, brand alliances (Xie and Johnson, 2004).

*Innovation of the company:* One of the critical areas of cooperation between enterprises is the implementation of innovative activities. According to the definition proposed in the Oslo Manual, it means all scientific, technical, organizational, financial, and commercial activities which directly lead, or are intended to lead, to the implementation of innovation. Some of these activities may be innovative in themselves, while others are not new but are necessary for its implementation (OECD, 2005).

Nowadays, activities related to implementing new solutions in a company are an inseparable element of the process of management and adaptation of the company to

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permanent changes in the environment. Innovations are also treated as a priority instrument facilitating maintaining a solid position in competition with competitors (Jasiński, 2006). This is particularly important at times of economic fluctuations and post-crisis periods when every new concept involves uncertainty about its actual effects on the company. Undertaking innovative activity requires the involvement of appropriate financial resources and human capital, open to new ideas (Gąsowska, 2014).

In theoretical considerations, we can observe a dynamic increase in interest in innovation and consistent attempts to link the dimension and scope of innovative activity of a given company with its size. One of them is the attempt proposed by Joseph Schumpeter, an innovative combination of capital and means of production (Schumpeter, 1960). The advantage of the innovative potential of large enterprises in terms of adaptation and commercialization of innovation was noticed. Similar views were expressed by Christopher Freeman, according to whom smaller businesses cannot afford to spend on research in innovative activities (Freeman, 1982).

In contrast, today's scientists do not see the link between a company's size and its innovation activity. They stress that cooperation by smaller economic entities allows for positive, innovative effects to be achieved, and often the limited production or service specialization of large companies may limit their innovative abilities (Ahuja, Lampert, and Tandon, 2008). Benefits resulting from cooperation within the framework of innovative activity include, among others: the possibility of reducing outlays by eliminating the duplication of R&D work of individual partners (Zander, 1999), gaining access to new markets and technologies, and sharing knowledge with other entities (Prahalad and Hamel, 1990). The research also confirms that combining external sources of knowledge with the enterprise's resources allows increasing efficiency in creating intellectual property and innovation by reducing costs and achieving higher revenues from the commercialization of innovation (Bae and Chang, 2012). In the context of the adopted topic, the role of foreign companies in this respect should also be taken into account. The most important benefits resulting from cooperation with foreign entities in the process of creating innovations include (Arias, 1995) reducing the risks and costs associated with the use of technology, reduction and sharing of uncertainties and R&D costs, access to third party knowledge, reducing the time between the development of innovation and its introduction to the market, the opportunity to seek and seize market opportunities, access to foreign markets and the possibility of further foreign expansion; development of the company's offer.

It should be stressed that the level of innovativeness of an enterprise is a result of the influence of various factors, starting from the attitude of the management, the quality of human capital, the level of advancement of technological solutions, through the innovation policy applied, and ending with the financing of innovative activity (Drewno, 2017). Therefore, an opportunity to increase their innovativeness is to create links with entities operating in the immediate environment. Undertaking such cooperation makes it possible to achieve economies of scale and expand partners'

competencies by sharing the results of the applied solutions (Wilkinson and Young, 2002).

*Foreign direct investment in the process of creating innovation of enterprises:* The transfer of techniques, technologies, and organizational skills from the investor's country to the country where the investment is allocated is primarily aimed at strengthening and maintaining the comparative advantages of the investor in the country where the investment is made (Ozawa, 1992). Establishing filii abroad requires the investor to fully equip it, which for the host country is an essential element of production growth, access to technological knowledge, and infrastructure development. The benefits concern new enterprises and existing ones, which can be modernized thanks to foreign technology. The influx of technology contributes to the growth of production and employment in foreign branches in the host country and the growth of these sizes in many other local companies working for branches as sub-suppliers or traders. An indirect positive effect of the influx of new technology is improved quality of manufactured goods, the development of infrastructure, and organizational changes.

Countries importing capital have the opportunity to access modern technology that is not always available on the market or too expensive for them. Its transfer within the foreign investment framework often turns out to be cheaper and faster, and the technology is more modern, combined with access to economic and organizational knowledge. The disadvantage of such technology transfer is the lack of possibility to choose the type of technology and sector of its deposit (Milińska-Struzik, Nowara, and Truskolaski, 2007). Therefore, technology transfer through FDI is complex and constitutes a kind of technological package, including various carriers and forms of technology: people, goods, documentation, staff training, import, and cooperation links.

The results of empirical research on the impact of foreign investors' activities on productivity are ambiguous. Holger Gorg and Eric Strobl quote twelve works whose results are entirely different (Gorg and Strobl, 2001). It turns out that the impact of foreign direct investors' activities on improving the productivity of industrial sectors is challenging to investigate, as the externalities for domestic companies may be significant. Djankov and Hoekman (2000) state the negative impact of foreign investors' presence on the productivity of Czech companies. In turn, the study by Kinoshita (2000) shows a positive impact of the presence of foreign investors on the productivity growth of Czech manufacturing companies, but under the condition that domestic companies have engaged in research and development. The results of Kinoshity (2000) show that the interaction between the presence of foreign investors and domestic R&D expenditure is likely to be a factor influencing productivity improvement. The productivity of an industrial sector can also be increased by trade.

Keller (1997) argues that thanks to high-tech imports, a country can gain access to R&D investment provided it has sufficient absorption capacity. The target country

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gains by using production for technically advanced intermediate products. Productivity increases with the amount of "beneficial" types of intermediate goods used in production (Jakubiak, 2002).

### **3. Research Methodology**

The study conducted by the author was based on a research questionnaire. The survey was conducted at the turn of June-August 2018 on a sample of 120 foreign companies from the list of the largest foreign investors in Poland, prepared by the Polish Information and Foreign Investment Agency. The targeted selection was applied as part of the conducted survey, which guaranteed a selection corresponding to specific survey criteria. Based on the data obtained in the survey, it is possible to conclude in the following categories: the size of companies, industry, by voivodships, legal form of activity, or finally, depending on the number and nature of innovations introduced.

Furthermore, to explain the impact and increase the incentives and disincentives to develop transnational cooperation, a logit model has been built to determine the likelihood of extending cooperation between foreign and domestic companies under certain assumed conditions for each model. When building the logit regression models, it was first checked whether there are outliers. The process of eliminating outlier observations was carried out for each measurable variable. Then the partial objective of the study was defined, which was to build logistic models, checking the probability of broadening cooperation between Polish and foreign companies and achieving the assumed goals of this cooperation. After the formal models of logistic regression were built, their parameters were estimated for specific occurring phenomena. After the estimation of parameters, the final forms of logistic models were achieved.

### **4. Results and Discussions**

Cooperation between foreign companies and domestic companies consisted primarily of contacts with suppliers. Nearly 70% of the surveyed enterprises indicated that there are mainly suppliers or sub-suppliers of products and services (representing such sectors as transport, communications, energy, gas, and water supply). The dominance of contacts with customers was indicated by 31% of respondents (mainly construction, trade, and repairs). Building and developing economic partnership relations within the framework of horizontal relations concerned only 11% of enterprises that started production or service cooperation within joint ventures with partners operating in a competitive area of economic activity.

The dominant type of innovative activity carried out within the framework of cooperation between domestic and foreign enterprises was investment expenditure on tangible assets such as the purchase of machinery and equipment, computer equipment, means of transport, as well as buildings (61% of the total number of companies active in innovation). Then there were:

- employee training (nearly 50%),
- purchase of software related to the introduction of product and process innovations (nearly 40%), and
- marketing activities related to the introduction of new or significantly improved products (nearly 30%).

Incidentally, the innovative activity undertaken was the activity related to research and development works. Only 7% of innovatively active enterprises undertook activities in this respect.

The most common form of technology transfer was purchasing machinery and equipment (78% of indications) and consulting services (32% of indications). Next, foreign enterprises indicated: purchase of licenses (20% of indications) and scientific-research results (9% of indications).

Surveys conducted among foreign companies have shown that they were active in transferring knowledge between their closest partners. The majority of companies (nearly 80%) declared that they had established and respected the rules of cooperation with their closest partners, which facilitated the transfer of knowledge, especially during the initial operation on the market. Companies were also willing to share knowledge with their direct partners (73%), which means that the companies were ready to exchange knowledge within the cooperation framework despite the high degree of formalization. Qualitative studies have shown that the knowledge transfer methods and techniques used demonstrate the complexity and diversity of their application. The most critical knowledge transfer methods and techniques were identified as those that take the form of direct or indirect contact with the "source of knowledge": direct consultations, telephone consultations, participation in training courses, and e-mail contact. The following were identified as less critical: access to technical documentation, e-learning, joint research, access to expertise on the website, or meetings in employee teams.

Furthermore, to explain the impact and increase the incentives and disincentives to develop transnational cooperation, a logit model has been built to determine the likelihood of extending cooperation between foreign and domestic companies under certain assumed conditions for each model. The general form of the model was adopted:

$$\text{logit } P = \alpha_0 + \sum_{j=1}^k \alpha_j \cdot X_j \quad (1)$$

where:

*Y* a dependent variable, taking two values:

1 - the desired event,

0 - an undesirable event

$X_i$ - explanatory (independent) quantitative or qualitative variables  $i=1,2,\dots,k$

In Table 4 it is shown the logistic model between the assessment of the level of service provided to institutions supporting cooperation in terms of establishing cooperation and the intention to extend it with new partners.

**Table 4.** Estimation of parameters of the logite regression model

N=45	Model: logistic regression (logit) Total loss: 26,002792574 Chi2(1)=7,6613 p=,005	
	Fixed B0	p.12
Evaluation	-6,348637	1,537034
Standard error	2,509178	0,643160
t (43)	-2,530166	2,389813
Level p	0,0151443	0,0213113

*Source:* Own study.

The model is as follows:

$$P\{Y_2 = 1\} = \frac{e^{-6,349+1,537 \cdot X_8}}{1+e^{-6,349+1,537 \cdot X_8}} \quad (2)$$

The above model gives rise to a claim: the higher the evaluation of the level of service in terms of establishing cooperation, the higher the probability of intention to extend the scope of cooperation with new partners.

In Table 5 it is shown the logistic model between the frequency of encountering communication problems and the intention to extend the scope of cooperation with new partners.

**Table 5.** Estimation of parameters of the logite regression model

N=45	Model: logistic regression (logit) Total loss: 26,769749192 Chi2(1)=6, 1247 p=0,1332	
	Fixed B0	p.12
Evaluation	2,097449	-0,9138511
Standard error	1,1587	0,4079164
t (43)	1,810174	-2,24029
Level p	0,07726068	0,03029276

*Source:* Own study.

The model is as follows:

$$P\{Y_2 = 1\} = \frac{e^{2,097-0,914 \cdot X_{12}}}{1+e^{2,097-0,914 \cdot X_{12}}} \quad (3)$$

The above model gives rise to a claim: the lower the frequency of encounters with communication problems, the higher the probability of intending to extend the scope of cooperation to new partners.

In Table 6 it is shown the logistic model between the frequency of encountering problems caused by the bureaucracy of cooperation and the intention to extend its scope to new partners.



**Table 6.** Estimation of parameters of the logit regression model

N=45	Model: logistic regression (logit)	
	Total loss: 9,686134882 Chi2(1)=40,295 p=,0000	
	Fixed B0	p.12
Evaluation	11,58484	-3,122087
Standard error	3,062281	0,8289596
t (43)	3,783077	-3,766271
Level p	0,000474143	0,000498716

Source: Own study.

The model is as follows:

$$P\{Y_2 = 1\} = \frac{e^{11,585=3,122 \cdot X_{16}}}{1+e^{11,585=3,122 \cdot X_{16}}} \quad (4)$$

The above model gives rise to a claim: the less frequent the problems caused by bureaucracy in business cooperation, the more likely it is to intend to extend the scope of cooperation to new partners.

In Table 7 it is shown the logistic model between the frequency of achieving the assumed cooperation objectives and the frequency of encountering problems related to non-compliance with the established principles of cooperation with the Polish partner

**Table 7.** Estimation of parameters of the logite regression model

N=45	Model: logistic regression (logit)	
	Total loss: 25, 568841860 Chi2(1)=4,6611 p=,03086	
	Fixed B0	p.12
Evaluation	2,892303	-0,7339597
Standard error	1,086821	0,3514392
t (43)	2,66125	-2,08844
Level p	0,01090185	0,04271485

Source: Own study.

The model is as follows:

$$P\{Y_1 = 1\} = \frac{e^{2,892-0,734 \cdot X_{14}}}{1+e^{2,892-0,734 \cdot X_{14}}} \quad (5)$$

The above model gives rise to a claim, the less frequent the problems associated with non-compliance, the higher the probability of achieving the objectives set.

Based on the presented logit models, it can be concluded that the chances of broadening the scope of cooperation between foreign and domestic enterprises to include new partners in Poland increase with the decrease in the frequency of problems in working out common principles of cooperation with the Polish partner, as well as the decrease in the frequency of problems caused by administrative, legal and bureaucratic differences in cooperation. It should be considered that these are not the only factors, but the most important ones.

## 5. Conclusions

Technology and knowledge transfer are among the most important benefits for a region receiving foreign investment, particularly valuable in underdeveloped regions in need of new development concepts and strategies. Through the use of science and technology, these regions have a chance to modernize themselves. High capital expenditure, which often goes beyond the financial capacity of underdeveloped regions, is an essential element of this process. The solution to this problem is precisely foreign investment, which fills this gap.

Therefore, the subject of the study was the assessment of the effects and impact of foreign enterprises on the transfer of new technologies and knowledge to domestic enterprises in Poland. It is clear from the studies carried out that it was important for companies to undertake and develop cooperation between themselves. This cooperation was desirable because it brought several benefits, including increased production and employment, access to new technologies, presentation of management organization techniques, forcing qualitative changes through necessary adaptations, co-implementation of new projects, joint training of employees, or exchange of commercial information. National economic partners were also an essential source of information about the local market, competitors, and potential customers. This created an opportunity for companies to gain a competitive advantage in the market and gain knowledge about new solutions to increase innovation in future activities.

The sum of the added value of cooperation between domestic and foreign companies is an 'injection' into the domestic economy. Modern technologies and management methods and techniques, the necessity of constant adaptation to the requirements of the globalizing market in local companies are the reasons why the transfer of capital in the form of foreign direct investments should be perceived as exceptionally necessary, and the supply of foreign capital to the Polish economy is one of the most critical factors of its further development.

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