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Knowledge spillovers and innovation: analysis of the relationships between service centres and MSMEs from the regional perspective³

INTRODUCTION

The innovativeness of micro, small and medium-sized enterprises (MSMEs) is of a great importance from the regional perspective. Due to their strong regional impact, innovative activities being implemented by MSMEs affect the quality of life of the local community. In turn, these innovative activities allow them to expand into markets with a larger geographical coverage, so that the whole region also benefits from the scale of operations or high profit margins being invested in the region.

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Innovation can be understood as the implementation of new improved offers for the market, which arise as a consequence of the creation or discovery of new knowledge that is embedded in a specific product of service (Łobacz, 2018). The creation or discovery of new knowledge is usually a result of informed investments made by economic agents. However, as knowledge demonstrates a natural susceptibility to spreading processes, other entities, apart from those that have invested in the development of new knowledge, may benefit from the results of those investments. Therefore, the flow of knowledge between entities is an important factor influencing innovation. As the spread of knowledge has geographical limits, smaller local companies can benefit from being located close to international corporations – in the service sector these include service centres in particular.

Thus, it is supposed that the innovativeness of service companies, which dominate in the regional perspective, may be stimulated when international service centres are located nearby. Hence, the purpose of the considerations presented in this paper is to assess the effects of exposure of MSMEs to knowledge transfer from multinational corporations and service centres in terms of their innovativeness. The analysis uses a regional perspective, based on the Zachodniopomorskie Voivodeship in Poland, in which the density of service centre locations is moderate compared to other regions in central and eastern Europe. The analysis is based on a quantitative research conducted in 2016 on a sample of 1,100 MSMEs located in the Zachodniopomorskie Voivodeship.

SERVICE CENTRES AND THEIR IMPACT ON MSMEs

The impact of service centres, representing a group of multinational corporations in the service sector, on local MSMEs is perceived as diverse and depending on the nature of their behaviour in regional economies. Generally, the three types of effects mentioned in the literature (Navaretti, Venables, 2004; Sass, 2011) are those related to:

- product market;
- factors of production;
- inflow of knowledge (knowledge spillovers).

Previous research indicates that both greenfield and brownfield type investments positively influence economic growth by raising the accumulation of capital, productivity, and transfer of knowledge and technology (Bayar, 2017). However, given the nature of investments made by foreign entities and the specific characteristics of the regions in which they locate, these effects have different strength and thus impact on the development of regions and locally operating MSMEs.

One of the often disputed aspects concerning the influence of foreign investors on local economies is the injection of investment capital, which increases the purchasing power in the region and, at the same time, translates into an increase in employment rate and wage expectations (MacDougall, 1960). Moreover, the

location of service centres, as with other multinational corporations, may sharpen competition at the local market level, leading to lower prices and the introduction of better products (Navaretti, Venables, 2004). As the latter can be perceived as a negative for local MSMEs, the positive impact of multinational corporations should also be observed.

Additionally, it is argued that investment usually passes from more to less developed countries, which entails a transfer of new technologies, knowledge and skills. By using their financial and organisational powers, service-oriented multinational corporations contribute to the development of the infrastructure necessary to provide high quality professional services (Niedzielski, Łobacz, 2017). Moreover, service centres, like other multinational corporations, with their specific personnel policy, contribute to the qualitative development of local human resources, e.g. through an employee training system (Sass, 2011).

The presence of service centres in a region, as with multinational corporations in general, may potentially generate positive externalities resulting from knowledge spillovers (Blomström, Kokko, 1997). As Arrow (1962) pointed out, knowledge is fundamentally different from other factors of production. The specific character results from its inherent features, including its intangibility, which implies its relatively easy replication and, to a large extent, non-exclusion, which in turn leads to a rapid increase in the amount of general knowledge locally and its transferability between economic units (Romer, 1986). Knowledge is the basis for development, being an impulse to develop innovation, initially radical and then incremental (Schumpeter, 1939). New knowledge creates new business opportunities that are used in different ways by enterprises (Arrow, 1962; Acs et al., 2009). Thus, it is argued that an inflow of new knowledge stimulates the development of business operations and market offers. However, the creation of new knowledge requires proportional investments, and thus benefiting from knowledge spillovers is always favourable.

It was demonstrated that the scale and intensity of knowledge spillovers depends on the size of the knowledge gap between the incoming and the local companies, including technology-related capabilities, human capital development and business practices (Rugraff, Hansen, 2011). The reason for this is the natural advantage of the incoming over the local companies (Dunning, 1988), as well as the ability or willingness of the incoming companies to protect their knowledge resources from spreading. Thus, the difference in impact of foreign investments on local economies is reportedly subject to high-tech versus low-tech sectors represented by incoming companies or knowledge-intensive versus regular enterprises.

The occurrence of knowledge spillovers from multinational corporations is to a large extent determined by the presence of the relationships between large enterprises and MSMEs. Research has demonstrated the joint immersion of small and big enterprises in the business environment and the opportunities resulting from that by observing how they affect the development of local small entities (Rugraff, Hansen,

2011). Moreover, direct connections between large incoming companies and small local companies can significantly contribute to strengthening the effects of knowledge spillovers. The strength of the relations translates into a positive impact on the growth of MSMEs (Hirschman, 1958). It is additionally argued that the stronger the relations that exist between local small firms and incoming multinational corporations, the greater the impact on local MSME development is (Altenburg, 2000; Scott-Kennel, Enderwick, 2005; Hansen, Schaumburg-Müller, 2006). However, even though the transfer of tacit knowledge is limited, as it requires time and favourable conditions to be ensured (Baruk, 2016), it requires more direct interactions to be transmitted effectively, such as through involvement in joint practices.

Direct relationships between small company owners and multinational corporation employees often brings new dynamics to the development of local companies. As with the business connections between local small and large companies, these may result in gaining access to new markets or in the creation of new market opportunities. Good practices, learnt and suitably adopted by the MSMEs, include work organisation, use of new production technologies, marketing and business management practices, etc., and these may result in enhancing their competitive advantage on the supra-regional, national or even international markets.

This means that MSMEs may benefit from the existence of service centres in their local business environment. These benefits result directly from the inflow of new knowledge, which brings new incentives that can translate into an intensification of innovative activities. The dependence between new knowledge inflows and MSME innovativeness will be further investigated in this paper.

METHODOLOGY

The theoretical considerations outlined above prompted the authors to investigate the effects of knowledge flows being a result of interactions between multinational service centres and local MSMEs in the regional context. MSME innovativeness, measured as the introduction of new enhanced solutions to the market, was here particularly considered. Innovativeness was analysed in conjunction with direct exposition to knowledge flows from service centres, regarded as a sub-group of the general group of multinational corporations.

The study directly investigated two channels of knowledge flow: (1) direct immersion in the knowledge-specific environment, and (2) direct interactions with knowledge transmitters. The first channel was operationalised as performing work in environments rich in specific knowledge (with people in multinational corporations /service centres or with technologies/physical objects used in/by multinational corporations/service centres and under an umbrella of inbound processes and procedures), in which tacit knowledge is transferred and specific experience is gained. The second channel was considered as being in the area of influence of people or

technologies/physical objects directly related to multinational corporations/service centres, allowing the gaining of new knowledge through listening and/or observing.

For this purpose, empirical data were used from quantitative research carried out in 2016 on a representative sample of 1,100 MSMEs located in the Zachodniopomorskie Voivodeship in Poland. The sampling process was probabilistic and took into account the following parameters: size of the enterprise (82.3% micro, 12.9% small, 4.8% medium), location of the enterprise (according to GUS data for sub-regions), sector of the enterprise's operations (industrial processing 7.9%; architecture 12.6%; trade and repair of motor vehicles 22.9%; transport and storage 6.5%; real estate 7.3%; professional, scientific and technical activities 8.0%; other services 6.3%; other sections 28.5%). Considering the given parameters, the structure of enterprises participating in the survey matched the structure of the general population of the MSMEs in the Zachodniopomorskie Voivodeship, which means that the sample may be considered as representative, and that the conclusions from the analysis can be generalised to the entire population in the regional perspective.

The collected data were analysed with the support of IBM SPSS. In particular, the focus was on variance analysis, i.e. comparing average values in group clusters directed towards confirming the correlations between the variables and determining the significance of differences between the groups.

SERVICE CENTRES KNOWLEDGE SPILLOVERS AND MSME INNOVATIVENESS: EMPIRICAL ANALYSIS

The results obtained in the present study suggest a positive impact of knowledge transfer from incoming multinational service centres to local MSMEs, resulting in the intensification of innovative activities for those companies whose owners or employees were exposed to any kind of collaboration. Based on those results, it can be concluded that the more intensive the exposition is, the more significant the results that are achieved.

Table 1 presents data that summarise the relations between variables representing the exposure of MSME owners and employees to knowledge transmitted by humans associated with multinational corporations/service centres and the innovativeness of those MSMEs after this exposure.

Analysis of the data suggests that companies whose owners have an experience of working in a service centre(s) or more general multinational corporation(s) launch new products on the market more often than those whose owners do not have this kind of experience (Chi square test = 11.097). Although the relationship between variables should be classified as weak (Pearson's $r = -0.104$), the data doubtfully indicate that the number of new products introduced to the market is greater when people have experience related to work at a multinational corporation(s) (35.4%), and it grows when experience is associated more specifically with a service centre(s) –

50%. Statistical tests (analysis of variance) confirm the significant difference between results achieved by MSME owners with employment experience in service centres or multinational corporations and owners without such experience: $F(2,227) = 3.097$, $p < 0.05$.

Table 1. Impact of MSMEs exposure to knowledge transfer from multinational corporations and service centres on their innovativeness in the context of human capital

Specification		MSMEs which have introduced innovations to the market (%)	
		yes	no
MSMEs whose OWNERS have experience of working for a <u>multinational corporation(s)</u>	yes	35.4	64.6
	no	21.6	78.4
MSMEs whose OWNERS have experience of working in a <u>service centre(s)</u>	yes	50.0	50.0
	no	22.4	77.6
Total		22.6	77.4
MSMEs whose EMPLOYEES have experience of working for a <u>multinational corporation(s)</u>	yes	37.5	62.5
	no	21.2	78.8
MSMEs whose EMPLOYEES have experience of working in a <u>service centre(s)</u>	yes	100.0	0.0
	no	–	–
Total		23.0	77.0
MSMEs whose OWNER(S) or EMPLOYEE(S) has/had direct relations with an employee(s) of a <u>multinational corporation(s) or service centre(s)</u>	yes	39.6	60.4
	no	19.5	80.5
Total		22.6	77.4

Source: own study.

The research results also indicate that MSMEs which employed people with knowledge and experience gained when working for service centre(s), introduced new innovative offers to the market much more often (100% of such companies) than entities that either employed former workers of multinational corporation(s) (37.5%) or which lacked this type of human resource in their team. This relationship is confirmed statistically (Chi square = 11.148).

It was also observed that direct interactions with new knowledge transmitters enhance the probability of intensified innovative actions. According to the results, the regional MSMEs whose owners or employees were in constant interpersonal relations with representatives of multinational corporations, and more specifically service centre associates, introduced new products to the market more often (39.6%) than entities whose staff did not maintain such relations (19.5%). Although the

statistical relationship (Chi square = 31.693) can be generally perceived as weak (Pearson's $r = -0.119$), in the context of the total number of surveyed enterprises that have introduced new products to the market (22.6%) it seems to be significant.

Direct interactions with physical capital used for the product development and delivery by multinational corporations also seems to be an important source of new knowledge, contributing to the implementation of new innovative offers by MSMEs. This relates both to direct immersion in work processes supported by particular technologies, machines or devices and short term interaction with them, involving observation rather than practice. It is also demonstrated that interactions with multinational corporations enhance the purchasing power of MSMEs contributing to new technology acquisitions and thus extending their power to generate and implement innovative offers to the local and inter-regional market.

Very similar results are achieved when MSMEs are exposed to knowledge transfer from multinational corporations and service centres in the context of physical capital, but only here has a weaker impact been observed. The data presented in Table 2 demonstrate that those MSMEs which have acquired technologies, machines or devices previously owned by service centres introduced new products to the market much more often (100%) than those which had similar relationships with multinational corporations in general (57.1%). The significant difference between the groups is confirmed by the statistical relationship (Chi square = 25.496, Pearson's $r = -0.132$). This finding seems to be supported by the fact that the number of MSMEs which lacked such interactions and introduced a new product to the market did not exceed 22.6%. A significant difference between those two groups of MSMEs confirms the analysis of variance: $F(3,36) = 1.624$, $p < 0.05$, where Pearson's r equals 0.201.

Similarly, MSMEs that used technologies, machines or devices previously owned by a service centre(s) in order to perform their operations introduced new products to the market more often (100%) than those companies that experienced similar collaboration with other multinational corporations (48.4%). In turn, the share of MSMEs that lacked collaborative interactions with any multinational corporation, including service centres, leading to the use of equipment from large companies and which were innovative in the referenced period, did not exceed 22.6%. Also, the statistical difference between the above mentioned groups is significant, as confirmed by the analysis of variance: $F(3,36) = 3.276$, $p < 0.05$, with a Pearson's r of 0.032.

In addition, the data in Table 2 indicate that MSMEs which have acquired technologies, machines or devices in collaboration with a service centre(s) introduced new products to the market significantly more often (100%) than those without such an interaction (22.6%). The calculation of variance confirms the statistical differences between the groups: $F(3,36) = 8.147$, $p < 0.05$.

Table 2. Impact of MSMEs exposure to knowledge transfer from multinational corporations and service centres on their innovativeness in the context of physical capital

Specification		MSMEs which have introduced innovations to the market (%)	
		yes	no
MSMEs which have acquired technologies, machines or devices previously owned by a <u>multinational corporation(s)</u>	yes	57.1	42.9
	no	22.3	77.7
MSMEs which have acquired technologies, machines or devices previously owned by a <u>service centre(s)</u>	yes	100.0	0.0
	no	22.5	77.5
Total		22.6	77.4
MSMEs which have used technologies, machines or devices owned by a <u>multinational corporation(s)</u> in order to perform their operations	yes	48.4	51.6
	no	22.1	77.9
MSMEs which have used technologies, machines or devices owned by a <u>service centre(s)</u> in order to perform their operations	yes	100.0	0.0
	no	22.6	77.4
Total		22.6	77.4
MSMEs which have acquired technologies, machines or devices in collaboration with a <u>multinational corporation(s)</u>	yes	72.2	27.8
	no	21.8	78.2
MSMEs which have acquired technologies, machines or devices in collaboration with a <u>service centre(s)</u>	yes	100.0	0.0
	no	22.6	77.4
Total		22.6	77.4

Source: own study.

CONCLUSIONS

This analysis suggests that service centres may have a positive impact on MSMEs operating in the regional economies in which they deliberately locate. It supports the observations that small local companies may effectively use knowledge transmitted from service centres and translate it into new innovative market offers, thus contributing to regional development and local well-being. This knowledge transmission is possible when business relationships between local companies and incoming corporations exists, but also when inter-sectoral transfer of human capital takes place. This supports the results of previous studies indicating that links between international corporations and local companies have a positive impact on growth, and that the deeper and stronger the relationships between the companies, the greater the impact (Scott-Kennel, Enderwick, 2005).

In addition, it was indicated that tacit knowledge in particular, regardless of the human or physical capital transmission channel used, is transferred from service centres to local MSMEs when these are closely located and when more opportunities for collaboration are available. In particular, direct immersion in a knowledge-specific environment seems to be of great importance in the process and contributes to more significant results as far as new market offer development. It seems that direct exposure to knowledge flows by performing business activities with close interactions involving the human or physical capital accumulated in multinational corporations (and especially service centres) allows specific experience to be gained, which is then used for new market opportunity capture and in employing appropriate processes to enforce the opportunities within the organisation and in interactions with customers. In this regard, an intensive process of organisational socialisation can be observed (Piłat, 2016), which enables benefits to be gained from active participation in the development and exchange of new knowledge.

An interesting conclusion can be formulated from the observation of the regional impact of service centres in contrast with generally grouped multinational corporations. Regardless of the channel and intensity of knowledge transfer, the research results demonstrated that knowledge flows from service centres contribute more significantly to the innovativeness of local companies than that of other multinational corporations. As the group of MSMEs addressed in this research may be regarded as representative, this remark leads to an important confirmation of the vital role of service centres in regional economies, and thus gives some arguments to regional authorities making political decisions about encouraging this kind of foreign investment, an issue being quite extensively disputed.

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Summary

The innovativeness of micro, small and medium-sized enterprises (MSMEs) is dependent on accessibility to appropriate knowledge resources that enable creation of new market offers. Due to inherent limitations related to the possibilities of investing in the acquisition or creation of new knowledge, smaller entities may benefit from the proximity of large companies, especially multinational corporations, which are actively involved in new knowledge creation, and this knowledge has the ability to spill over. The flow of knowledge from service centres to local smaller companies has the potential to stimulate innovativeness in regional service functions, creating opportunities for

local entrepreneurs to develop and grow. Hence, the purpose of the considerations presented in this paper is to analyse the impact of the flow of knowledge from service centres to MSMEs as a result of interactions between them. For this purpose, empirical data from quantitative research carried out by the research team in 2016 on a representative sample of 1,100 micro small and medium-sized enterprises in the Zachodniopomorskie (West Pomerania) voivodeship were used. The analysis shows that service centres can have a positive impact on the innovativeness of companies in the regions in which they are located, provided that there is a flow of knowledge as a result of direct transfer or personal interactions.

Keywords: innovativeness, service centres, knowledge spillover, MSME, region.

Przepływ wiedzy a innowacyjność: analiza relacji pomiędzy centrami usług a sektorem MMSP w ujęciu regionalnym

Streszczenie

Innowacyjność mikro, małych i średnich przedsiębiorstw (MMSP) determinowana jest posiadaniem odpowiednich zasobów wiedzy, które umożliwiają tworzenie nowych ofert. Ze względu na ograniczenia związane z możliwościami inwestowania w nabycie lub wytworzenie nowej wiedzy, mniejsze podmioty mogą odnosić korzyści z bliskości dużych firm, w tym szczególnie międzynarodowych korporacji, które tworzą nową wiedzę, która następnie rozprzestrzenia się w obszarze swojego oddziaływania. Przepływ wiedzy z centrów usług do lokalnych mniejszych firm niesie za sobą potencjał rozwoju innowacyjności w regionalnych funkcjach usługowych, stwarzając lokalnym przedsiębiorcom możliwość rozwoju i wzrostu. Stąd celem przedstawionych w artykule rozważań jest ocena wpływu przepływu wiedzy z centrów usług do MMSP, następującego jako rezultat występujących pomiędzy nimi interakcji, na innowacyjność MMSP. W opracowaniu posłużono się danymi empirycznymi z badań ilościowych zrealizowanych przez zespół badawczy w 2016 roku na reprezentatywnej próbie 1100 mikro, małych i średnich przedsiębiorstw województwa zachodniopomorskiego. Z przeprowadzonej analizy wynika, że centra usług mogą pozytywnie oddziaływać na innowacyjność firm w regionach, w których się lokują, pod warunkiem wystąpienia przepływu wiedzy w wyniku bezpośredniego transferu lub styczności występujących pomiędzy personelem.

Słowa kluczowe: innowacyjność, centra usług, przepływ wiedzy, MMSP, region.

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