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THE POTENTIAL OF ACADEMIC ENTREPRENEURSHIP: A CHANCE FOR THE DEVELOPMENT OF THE SME SECTOR

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Abstract. *Globalization, social and economic progress are associated with such notions as: entrepreneurship, innovation and competitiveness. Both programmes and activities of states and international communities aim to improve the quality of life on a local and global scale by, e.g. reducing unemployment and supporting and increasing the competitiveness of entrepreneurs. The aim of the paper is to show the impact of selected features of tourism-related businesses at the level of their innovation. The paper presents the conditions that must be met in order to develop academic entrepreneurship in Polish universities. Legal conditions, forms of cooperation between universities and business, creation and commercialization of knowledge as well as shaping entrepreneurial attitudes were analysed.*
Keywords: *academic entrepreneurship, competitiveness, innovations*

Introduction

The term "academic entrepreneurship" has been introduced in Poland quite recently. Companies emerging from the union of business and science are still quite a unique phenomenon in the country. The experience of Western countries shows that such companies can function efficiently, grow, and even become global corporations. The majority of experts believe that the Polish market is still relatively young and developing, but the greatest successes of academic entrepreneurship are probably still ahead.

The aim of the research is to show the impact of selected features of tourism-related businesses on the level of their innovation. The paper presents the conditions should be met in order to develop academic entrepreneurship in Polish Higher education institutions. Legal conditions, forms of cooperation between universities and business, creation and commercialization of knowledge as well as shaping entrepreneurial attitudes were analysed.

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In general, academic entrepreneurship is identified with every activity in the field of practical support for new companies which use scientific know-how and databases, and is commonly associated with all kinds of involvement of various scientific centres, academics and students in an economic activity that is not necessarily based on intellectual property. It is owing to such activity that the university begins to function based on market principles.

The expected effect is the popularization of commercialization of scientific know-how, which results in mutual benefits for both academics and their scientific and business partners. Owing to such good practices, the economy gains access to innovative solutions and, moreover, new types of business are being created. However, through the increasing self-employment and competitiveness of the economy, new jobs are created for people with higher education, which translates into a reduction of unemployment. Academic entrepreneurship is most often associated with the creation of the so-called spin off companies that grow from a scientific institution ("a mother organization") while remaining in close cooperation with it.

The element that influences the competitiveness of the economy through the strengthening of cooperation between scientific centres and business entities is certainly an increasingly popular phenomenon of academic entrepreneurship. It can be assumed that the factor influencing its development is the promotion of innovation in entrepreneurship among students by analysing case studies and engaging them in undertaking various types of projects related to economic activity.

Literature review

According to research conducted by the Polish Agency for Enterprise Development, entrepreneurship education in Polish universities is four times less effective than that offered to young people in the most developed countries (Tarnawa, Węcławska, Zadura-Lichota, & Zbierowski, 2016). Neither do young Poles learn how to meet the needs of the local community through their own businesses. After graduation, students often have no knowledge or tools to develop on the local market. One of the problems in Poland is unemployment among young people living in regions remote from major cities.

The broadly understood issues of entrepreneurship in the academic world have been discussed for a dozen or so years both in Poland and around the world. The introduced amendments to the Act on Higher Education and certain forms of supporting innovative activities are conducive to the development of cooperation between the world of science and business. That is how the concept of academic entrepreneurship has been spreading. Students and their entrepreneurial attitudes

play a significant role in academic entrepreneurship, regardless of the accepted definition.

The subject literature also includes the concept of spin-out, which is practically used interchangeably in relation to spin-offs (Matusiak, 2005).

- *Spin-off companies* are enterprises created as a result of the employees of the parent unit becoming independent yet using its material and intellectual potential and leaning on the results of research and development carried out in this unit. These companies are dependent and affiliated by capital or operations with the parent unit [e.g. legal services, accounting, marketing, leveraging the parent company's distribution channels].
- *Spin-out companies* are enterprises created as a result of the employees of the parent unit becoming independent yet using its material and intellectual potential and leaning on the results of research and development carried out in this unit. Enterprises of this type are independent of the parent organization.
- *"Grey spin-off"* – the term is used to determine the [unregulated] use of a university's infrastructure and intellectual property for the purposes of independent economic activity of the researchers [the law determines this not as infringement of intellectual property but as an ethical violation]

In Poland, the promotion of academic entrepreneurship is supported, e.g. through various types of initiatives, such as technology parks, business incubators and technology transfer centres.

Academic entrepreneurship

Academic entrepreneurs include people associated with universities and other entities operating in the area of science and research and development, i.e. researchers, students, PhD students and people interested in commercial ways of using the acquired knowledge by undertaking independent business activity.
As part of business activities, these people (Matusiak, 2011):

- develop and/or improve new products, technologies, organization and management systems,
- interpret the research results necessary to implement a license,
- introduce patents, utility models and rationalization ideas to business practice,
- design and implement product and service innovations for innovation trading.

Features characterizing an academic entrepreneur are presented in the following Table 1.

Table 1 ***Characteristics of an academic entrepreneur*** *(own study based on Matusiak, 2011)*

Feature	Characteristic
Diverse knowledge, contacts and opportunities	An academic entrepreneur operates simultaneously in many environments, spheres and worlds, which creates unique opportunities for development and broadening of knowledge and expanding contacts which create a potential background for expansion.
The ability to integrate a process	The ability to integrate the process of collecting, selecting and processing information with decision-making mechanisms and the ability to simultaneously synchronize work in different phases of the decision-making process, which allows not to postpone certain information, assumptions, hypotheses or assessments.
The possibilities of global operation	The possibilities of global operation, including broad contacts and frequent movement, which increase the possibility of identifying and using opportunities.
The ability to find oneself in the right place and time	A flexible identification of changes in the environment which allows determining the possibilities that bring the assumed effects.
Identification of the business role as an intellectual challenge and adventure	Allows maintaining a certain distance to one's role and can be a source of timeless inspiration.
Ethical behaviour	Attachment to ethical issues and employee development.

Interest in the subject of pre-incubation and incubation programmes, and its development, is a sign of changes taking place in Polish universities, which should result in strengthening activities in terms of supporting entrepreneurship and transfer of knowledge to the economy. Recently, there has been an increase in awareness of the role of intellectual entrepreneurship [including innovation] both in the world of science and business. It should be emphasized that academic entrepreneurship is a commonly used term, and there is no single definition that would fully reflect its essence. A summary of definitions based on a literature analysis is presented below.

Table 2 ***A review of the definition of academic entrepreneurship*** *(own study)*

Authors	Academic entrepreneurship
Matusiak & Matusiak	The concept of academic entrepreneurship is identified with activity to practically support new companies based on the know-how of people connected with scientific research (Matusiak & Matusiak, 2007).

continued Table 2

Guliński & Zasiadły	Academic entrepreneurship as a synonym for concepts such as technology entrepreneurship or innovative entrepreneurship and the entities created as part of it are referred to as techno-starters. Academic entrepreneurship is widely identified with all kinds of involvement of various scientific institutions, academics and students in economic activity, which does not need to be based on intellectual property (Guliński & Zasiadły, 2005).

Although the formation of spin-off companies has been arousing interest for years, no single, generally accepted definition of this type of business entities has been developed so far. The spin-off concept itself is used to define an entity which is created as a result of separating from its parent in order to undertake activities that were difficult or impossible to implement within the previous framework. Problems with the spin-off interpretation appeared when the university or scientific institution got involved as one of the parties. Table 3 presents a summary of the most important definitions of the spin-off problem.

Table 3 ***A review of the definition of spin-off*** *(own study)*

Authors	SPIN - OFF
Authors of the American Bank of Boston report together with the Massachusetts Institute of Technology (MIT, 1997)	The broadest definition interpreting the phenomenon was developed by the American Bank of Boston together with the Massachusetts Institute of Technology (MIT, 1997). Although this report did not use the spin-off concept but only "MIT related companies", it was recognized that spin-offs are knowledge-based entities created both by university employees and its graduates.
E. Roberts & D. Malone	Malone presented a more specific understanding of this concept, interpreting spin-off mainly in the context of commercialization and transfer of knowledge and technology. It is a separate legal entity, created based on technology provided by the mother institution (parent organization) and supported financially by, e.g. a venture capital fund (Roberts & Malone, 1996).
Ray Smilor (University of California)	Smilor pointed out that when a former employee of the parent entity (in this case a university) is acting as the founding entrepreneur, this makes the child entity a spin-off, which has probably settled the scope of personal relations between the company and the university too schematically (Smilor, Gibson, & Ditrich, 1990).
N. Nicolaou & S.Birley (Imperial College of Science, Technology and Medicine)	Nicolaou and Birley presented a more flexible approach to the issue of personnel transfer, indicating that the necessary condition for a spin-off is transfer of technology (from the university), but not necessarily of scientific staff [in the sense of employees leaving the university] (Nicolaou & Birley, 2003).

continued Table 3

E. Roberts	Roberts also allowed the non-technological nature of the transfer (e.g. of staff only), which would allow classifying, e.g. consulting companies established by researchers as spin-offs (Djokovic & Soutaris, 2008).

Apart from creating new knowledge, its transfer and dissemination, universities are increasingly implementing the so-called "third mission". One of the aims of the university is to facilitate the flow of knowledge and technology to the world of industry; therefore, they are treated as organizations supporting regional economic growth (Morrison, 2013). N. Nicolaou and S. Birley defined three types of spin-offs based on cross-linking and involvement of key factors [the human, the scientific institution, ownership connections] (Nicolaou & Birley, 2003).

Table 4 ***Types of spin-offs*** *(own study based on Nicolaou & Birley, 2003)*

Type of spin-offs	Characteristic
Orthodox	The entity is based on a researcher-inventor and the transferred technology.
Hybrid	The entity is based on the transferred technology, while research workers (all who are involved in the project, or only some) may remain with the university, acting as an advisor in the company (the scientific council), a controller (the supervisory board), etc.;
Technology	The entity is based on technology transferred from the university, however, the academic (inventor) has no contact with the newly created company. However, they may hold shares in it, or provide advisory services to it.

Development of academic entrepreneurship in Poland

Issues related to cooperation in science and business, commercialization of technology and scientific knowledge or the operation of spin off companies have been of interest to the world of science, business, politics and media (Matusiak, 2005). Despite the fact that the representatives of science or business hope for new technology transfer channels to be launched, this area still raises many fears and doubts.

An analysis of numerous studies, collations, and statistics devoted to the broadly understood subject of academic entrepreneurship allows a conclusion that academic entrepreneurship in Poland is developing, but it can be assumed that promoting successes born from cooperation between science and business brings the expected results. In-depth research on the development of academic entrepreneurship in Poland, carried out on behalf of the Polish Agency of

Entrepreneurship Development (PAED) (PARP, 2017) demonstrates that training and entrepreneurship courses for both academics and lecturers of the university, as well as students, are needed; because Poland has huge, untapped potential for academic entrepreneurship.

The innovative activity of Polish enterprises is the subject of many discussions in economic and political circles. According to the Central Statistical Office (CSO, 2016), in the years 2013-2015, 18.9% of industrial enterprises and 10.6% of service providers demonstrated innovative activity (compared with 18.6% and 12.3% in the years 2012-2014). New or significantly improved product or process innovations were introduced by 17.6% of industrial enterprises and 9.8% of service providers (in 2012-2014, 17.5% and 11.4%, respectively). Spending on innovative activity in 2015 amounted to approx. PLN 31 billion in industrial enterprises and approx. PLN 12.9 billion in service providers (PLN 24.6 billion and PLN 12.2 billion in 2014, respectively) (see Figure 1). Many statistics and surveys, including the PARP report (Zadura-Lichota, 2015) show that Polish enterprises in the EU are at the end of the list of innovative entities (Melnarowicz, 2017).

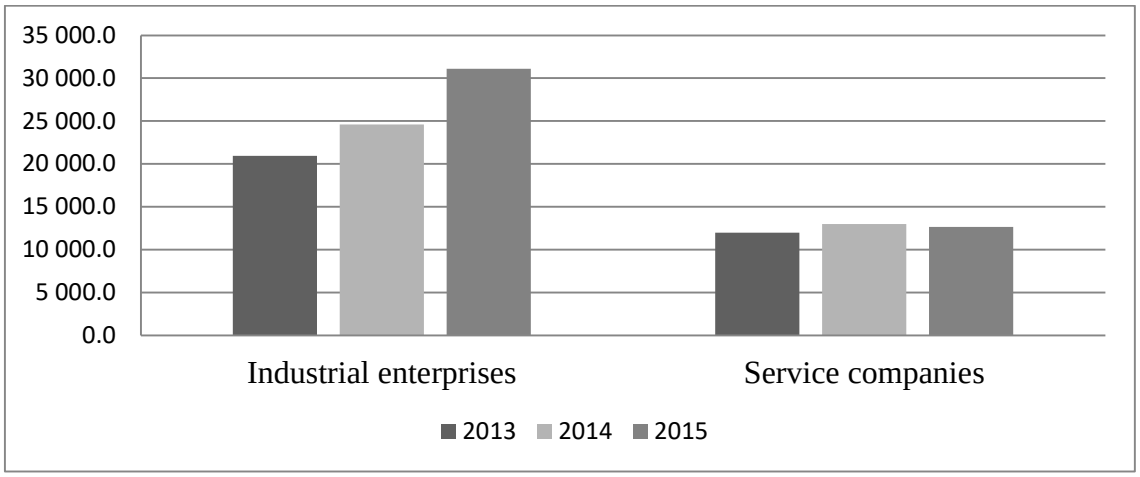

Figure 1 ***Spending on innovative activities in Poland (PLN)***
(own study based on CSO, 2016)

A strong, although small group of innovators identified by public statistics, is prospering in Poland. This includes an even smaller group of beneficiaries of public support, which achieves above-average results regarding innovative activity as compared with the total population of enterprises. This group of beneficiaries, and its sub-group, has small but very promising potential in the area of innovation. These companies are innovative and competitive on a European or global scale. What remains is to carry out research, analysis and training to release

the innovative potential in Poles. Unfortunately, the group of micro-enterprises is not included in public statistics measuring the level of innovation in enterprises.

Upon analysing the development of a start-up in Poland, one can conclude that a large part of innovations is born among the smallest business entities. Also a large part of new, small entities are registered for the purposes of implementing an innovative business idea (Zadura-Lichota, 2015). When asked about associations with the term "innovative company" (see Fig. 2, respondents participating in a study on enterprise innovation in Poland (Zadura-Lichota, 2015) replied that it was primarily associated with modernity, the future, following the spirit of the times (23% of indications), new technologies (23%), development and improvement in an enterprise (17%). In the case of new products and services as well as innovative solutions, the results were lower (less than 10%).

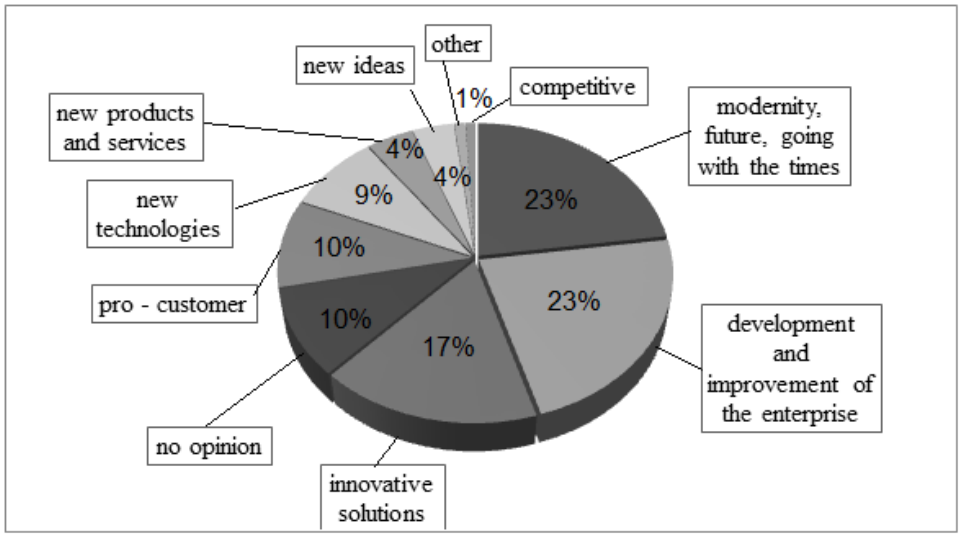

Figure 2 ***Micro-entrepreneurs' associations with the term "innovative company" (in %, N = 1277)*** *(own study based on Zadura-Lichota, 2015)*

In the search for examples of best practice, it is impossible not to mention the laureates of the "New Tech New Travel" contest. The organizer of the competition was the Polish Tourist Organization, and the Ministry of Sport and Tourism took its patronage. The competition's mission was to search for and promote innovative technological solutions for tourism, with particular emphasis on the potential of young, innovative companies (start-ups). In addition, the aim of the competition was to discover new technology products that facilitate travel, improve management and enable the promotion of Polish companies and tourist regions. That is how tourism entrepreneurs can see the best technological projects and new trends in technologies, while managers of young technology companies will learn the potential and needs of the tourism industry. The cooperation between Information and Communication Technologies and the tourism industry

will enable creating modern solutions necessary for the development of e-tourism, m-tourism, as well as facilities that will provide modern tourists with a sense of security and access to the best information that influences on booking behaviour, technology use in travel, key markets and trends (Ochoa Siguencia, 2018). The winners were awarded in two categories, business to business (B2B) and business to consumer (B2C).

Table 5 ***Winners of the "New Tech, New Travel" competition***
(own study based on Home, n.d.)

Company name	Project description
Winner in the B2B category Telmedicin Sp. z o. o.	Online medical consultations in the patient's language while traveling. This is one of the first telemedicine platforms in Poland that allows consulting a doctor in a mother tongue while traveling.
Distinction in the B2B category busradar.pl	A browser for domestic and international bus connections acting as a portal and application.
Distinction in the B2B category BedBooking	A mobile PMS (Property Management System) system is a dedicated tool for people who rent accommodation in small, non-hotel accommodation facilities.
Distinction in the B2C category XOXO WiFi	XOXO WiFi is a mobile hotspot; a small device provides unlimited access to high-speed 4G Internet in over 100 countries around the world, without the need to look for stores that carry SIM cards and to handle problems with registration of these cards. The device has a patented technology that connects to the best local network available in the area.

Conclusion

University curricula and student internships should be verified and adapted to market needs. The academic environment should show greater willingness and initiative in establishing effective cooperation with the business environment. It is necessary to set development directions and, at the same time, to support young entrepreneurs in testing and improving their ideas and adapting them to market needs. It also seems crucial to conduct entrepreneurship training, establish contacts with entrepreneurs in order to broaden students' knowledge and equip them with skills that allow them to develop their own business.

In Poland, an increase in cooperation among companies, development of the service sector and an increased awareness of the importance of innovation is observed, as well as growth of the start-up market and an increase in private expenditure on R & D. "Will these changes be sufficient to maintain economic

growth and develop the innovation of Polish companies? Probably not, because the real change we need is systemic" (Zadura-Lichota, 2015).

Summary

The article presents the conditions that must be met in order to develop academic entrepreneurship in Polish universities. Legal conditions, forms of cooperation between universities and business, creation and commercialization of knowledge as well as shaping entrepreneurial attitudes were analysed.

The element that influences the competitiveness of the economy through the strengthening of cooperation between scientific centres and business entities is certainly an increasingly popular phenomenon of academic entrepreneurship. It can be assumed that the factor influencing its development is the promotion of innovation in entrepreneurship among students by analysing case studies and engaging them in undertaking various types of projects related to economic activity.

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