

## INNOVATIVE POTENTIAL OF ENTERPRISES IN THE LUBLIN REGION ON THE EXAMPLE OF START-UP ORGANIZATIONS

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**Purpose:** The aim of the paper is to identify the potential of the Lublin Region in the context of the innovativeness of Lublin enterprises. The study presents the position occupied by Lublin Region compared to other Regions in the country based on selected criteria. Innovative start-up organizations from the Lublin Region were also analyzed in the paper.

**Design/methodology/approach:** The theoretical part of the study was based on a review of the available literature on the subject. The empirical part of the study was developed based on reports from external institutions, data from the Central Statistical Office, and research conducted in 2020-2021 for the doctoral thesis.

**Findings:** The study shows that in the Lublin Region: micro-enterprises are established most frequently, the share of innovative enterprises in the total number of enterprises increases, and there is a high percentage of enterprises active in innovation and undertaking cooperation for innovation. Based on the research, Lublin is a friendly place for future entrepreneurs. Innovative start-ups from the Lublin Region are constantly developing their innovative activity (depending on the high potential of their employees, availability of qualified staff, and customers, accessible internal communication, and flexible organizational structure). They are planning to implement other innovative solutions; the most important thing for them is product development and achieving satisfactory profitability.

**Research limitations/implications:** The main limitation was the difficulty in collecting empirical material for a study of start-ups from the Lublin Region. The COVID-19 pandemic was ongoing in 2020-2021, which meant that entrepreneurs were mainly focused on survival, were not interested in participating in the study, and the shift to remote working contacted them completely impossible.

**Practical implications:** The research shows that many initiatives to support creative entrepreneurs setting up small businesses should be created in the Lublin Region. In addition, entrepreneurs should focus on expanding into foreign markets, strengthening the Region's potential, and contributing to greater international recognition of the Lublin Region.

**Social implications:** In their strategy, entrepreneurs in the Lublin Region should undertake actions that favor the local community, create solutions to improve social welfare, and aim to reduce the level of poverty in the Region so that the least affluent part of society has access to modern solutions and the possibility of personal development.

**Originality/value:** Based on the conducted studies, it should be stated that the Lublin Region is constantly developing its innovative potential. Despite the unfavorable economic conditions of the Region, the number of small, thriving businesses focused on innovation is increasing.

The Lublin Region and its initiatives create conditions for further investment activities, bringing benefits to entrepreneurs and the local community and developing the Region's potential.

**Keywords:** innovative organizations, start-up, Lublin Region.

**Category of the paper:** literature review, research paper.

## 1. Introduction

The country's socio-economic situation, the high competitiveness of companies in a leading position on the market, and the dynamically changing needs and expectations of customers result in an out-of-the-box approach to business. Today's entrepreneurs face the challenge of creating innovative organizations that generate unique customer value. The workforce competencies, creative solutions, and an innovation-friendly culture are all essential here. It is also important to cooperate based on sharing knowledge and resources and exploit the potential inherent in a given region.

The aim of the study is to identify the potential of the Lublin Region in the context of the innovativeness of Lublin enterprises, taking into account such criteria as the share of particular types of enterprises by the number of employees in the total number of enterprises in the Region, the share of innovative enterprises in the total number of enterprises in the Region, granted patents and the position occupied in national and international rankings of innovativeness. The study presents Lublin Region compared to other Regions in the country based on the above criteria. Innovative start-up organizations from the Lublin Region were also analyzed in the publication. The study included an indication of the number and type of innovations introduced by them, an assessment of the start-up's innovativeness, an indication of factors influencing innovativeness, the importance of key performance indicators in the adopted strategy, an indication of the number of patents obtained and plans for innovation implementation.

The study is based on a review of the literature on the subject, an analysis of reports from various external institutions (Startup Poland Foundation, Polish Agency for Enterprise Development, Millennium Bank, Foreign Direct Investment), data from the Central Statistical Office, as well as on research conducted in 2020-2021 for the doctoral thesis.

## 2. Innovative organizations - a literature review

Innovation is a broad concept referring to creativity undertaken by human beings. It most often describes the nature of activity in modern companies. An appropriate organizational culture based on sharing knowledge and generating collaborative solutions of unique value to

the customer is critical. Innovation also manifests itself in the orientation of organizational, technical, financial, scientific, and commercial activities toward implementing innovative solutions (OECD, 2008, p. 49).

Innovation is difficult to define unambiguously, so many interpretations exist in the literature. Initially, it was identified with innovative technology. The forerunner of this approach is J. Schumpeter, who emphasizes that innovation refers to the introduction of a solution (product, service, or new manufacturing method) into economic circulation on a global scale. Nowadays, the term has a slightly broader meaning - innovation is a new solution that improves efficiency and enables a sustainable competitive advantage in the market (Czubała, 2015, p. 2). The definition of innovation proposed in the Oslo Manual, according to innovation is 'the implementation of a new or significantly improved product (product or service) or process, a new marketing method or a new organizational method in economic practice, workplace organization or relations with the environment,' has also gained popularity (OECD, 2008, p. 48). Different classification criteria for innovation have also been introduced in the literature. The most popular one distinguishes between product innovation (focusing on the introduction of a new product/service), process innovation (related to the modification of the value chain), marketing innovation (based on the implementation of a new marketing strategy or concept) and organizational innovation (related to the introduction of a new distribution or work organization) (OECD, 2008, pp. 50 et seq.).

Innovative organizations are distinguished by their ability to continually anticipate and adapt to changes in their environment. They create, absorb, and sell new products or services. In turn, the effect of their innovativeness is several benefits directed toward the producer and the final purchaser (Janasz, 2011a, p. 46). Additionally, according to A.H. Jasiński (1992), innovation-oriented organizations:

- carry out research and development work,
- they provide significant funding for this type of activity,
- have a high proportion of novelties in their production volume,
- constantly introduce new developments of a scientific and technical nature,
- are focused on systematically innovating in the markets.

A study by the Polish Agency for Enterprise Development (PARP, 2007, p. 19) shows that, in the opinion of entrepreneurs, the innovativeness of an organization depends to a large extent on the personality of the company's managers. Openness to innovation, which creates an organizational culture based on ingenuity and the manifestation of individual initiative, is essential. It is also vital to create an organizational structure that includes a person, unit, or department responsible for the company's innovation activities. Focusing on innovation also means concentrating on the correct information flow and strategy to operate in a market niche. However, an innovative organization's cornerstone is attracting the right personnel with formal education, relevant qualifications, practical experience, and an internal need to monitor the market situation.

According to M. Dolińska (2010), an innovative enterprise is distinguished by its ability to create innovation, flexibility, the continuous implementation of new solutions, and forward-thinking. Also important is the ability to build and effectively use innovation potential based on critical competencies, acquire, develop, and manage knowledge, employ creative employees and develop their competencies, and conduct research and development work. Innovative organizations should also base their activities on state-of-the-art technologies, exploiting synergies, building relationship capital, and openness to change.

Unfortunately, constant experimentation, risky decision-making, and learning from mistakes make innovation easier to initiate in smaller organizations with a more flexible structure (Adamczyk, 2015, p. 204). Additionally, L. Dimitrovy (2013, p. 6) found that managers who own the company have a much higher propensity for risk than those merely employed in managerial positions. In turn, innovation advantage in small-scale enterprises is dependent on (Rothwell, Dodgson, 1991; Stawasz, 1999; Pawlicz et al., 2017):

- flexible management structures - they enable the introduction of pro-innovative activities in the company, a dynamic response to changing environmental conditions, and give the readiness to make risky decisions,
- complete freedom of action by the developers and a reward commensurate with the effort put in to achieve success,
- size of capital - in smaller companies, the capital frozen in obsolete technological generations is much smaller than in established companies (operating obsolete technologies for an extended period), which are cautious about commercializing innovative solutions.

According to D. Janczewska (2012, p. 16), innovation potential in micro-enterprises should be understood as the sum of intangible and tangible resources of a given enterprise. Intangible resources are an essential component of small enterprises. Namely, they represent unique and unrepeatable values, such as knowledge, traditions, experience, absorptive capacity for knowledge, or specialized skills. Tangible resources are the physical foundation that enables the generation of new products, services, or practical solutions. They form a limited set of machinery, computers, technological equipment, buildings, etc.

The business models of today's entrepreneurs mainly focus on innovation, which is a process focused on finding value to improve current products/services or to meet previously unrecognized demand (Saura et al., 2019). There are many organizations on the market. They take risks and implement innovative solutions while creating unique value for the client. These types of organizations mainly include start-ups, inherently focused on introducing cutting-edge technological solutions. The literature on the subject says, "there is a belief that innovation is the foundation of the start-up and failure is inherent in its everyday life" (Berezowski, Kretek, 2016, pp. 58-59).

Start-ups are among the organizations that are the backbone of global economies focused on innovation in today's economic, environmental, techno-technological, and socio-cultural landscape (Chrzanowski, Zawada, 2018, p. 42). According to A. Skala (2017, p. 37), a start-up is perceived as a new company:

- testing an innovative business model,
- with no operational history,
- operating in a low-demand, high-risk environment,
- whose primary resources are the skills, experience, knowledge, and social capital of the founders,
- whose main element of the business model is an innovative product or service based on modern technology and knowledge,
- which is organizationally sprawling,
- having a flexible, networked, and flat structure,
- whose core element of organizational culture is strong leadership.

Start-up organizations are open to sources of the capital present in the environment, which results in the acquisition of unique knowledge that enables the creation of breakthrough solutions and their implementation (Chrzanowski, Zawada, 2018, p. 43). Their activities often focus on process, environmental, product, organizational, and marketing innovations (Janczewska, 2012, p. 15). Start-ups become known as innovative organizations due to their undertaking of activities in the high-tech circle, as well as their focus on data, knowledge, and information processing, which underpins their scaled business model (Chrzanowski, Zawada, 2018, p. 51).

### **3. Characteristics of the Lublin Region concerning the innovativeness of enterprises**

Lublin Region is in the eastern part of Poland. It is the third largest Region in the country (25,122 km<sup>2</sup>) with a population of 2,038,299. The population density in the Lublin Region is 81 persons/km<sup>2</sup>, and the urbanization rate is 46.2%. According to data from the Central Statistical Office, Lublin Region is the Region most at risk of poverty (Lublin Region - 24.4%, Poland - 14.8%).

In 2021, there were 199 541 entities registered in the REGON register in the Lublin Region. Based on the number of employees, the most significant number of entities were micro-enterprises employing 0-9 employees (193 081), fewer were small entities employing 10-49 employees (5210), and medium-sized entities employing 50-249 employees (1125). The smallest were large enterprises employing 250 or more employees (125). The analysis of entities with legal personality in the context of the number of employees in the Lublin Region

in 2010-2021 (Table 1) proves that year by year, the percentage share of micro-enterprises in the total number of entities is successively increasing, while the number of small, medium and large enterprises is decreasing.

**Table 1.**

*Legal entities registered in the REGON register by the number of employees in Lublin Region in 2010-2021 (% share)*

Company size	Share (%) of companies in a given year												Rank
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Large (250 or more employees)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4
Medium (50-249 employees)	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	3
Small (10-49 employees)	4.0	4.0	3.5	3.4	3.3	3.3	3.3	3.2	3.1	2.9	2.7	2.6	2
Micro (0-9 employees)	95.2	95.2	95.7	95.8	95.9	95.9	95.9	96.0	96.2	96.4	96.6	96.8	1
<b>Total (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Source: own compilation based on data from Central Statistical Office of 16.11.2022.

The average share of innovative enterprises in the total number of enterprises (Table 2) over the last 12 years in the Lublin Region ranged from 12.1% to as high as 30.9%. As a result, Lublin Region is ranked 4th in the ranking of 16 Regions from the country. Moreover, it was well above the national average in 2014, 2016, and 2018. It was weakest in 2019, recording a 3.3 p.p. decline compared to the national average.

**Table 2.**

*The average share of innovative enterprises in the total number of enterprises in the Regions in 2010-2021 (%)*

Region	Year												12-year average	Rank
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Greater Poland	14.3	15.1	11.8	12.1	11.3	13.0	15.3	13.8	19.0	15.8	29.7	18.1	15.78	10
Kujawsko-Pomorskie	13.6	15.4	14.2	11.0	12.4	12.5	14.2	12.1	21.0	10.8	25.8	15.9	14.91	12
Lesser Poland	14.5	15.3	15.2	14.9	13.5	15.2	17.3	15.1	22.2	19.3	35.0	22.5	18.33	2
Lodz	11.9	9.8	12.6	13.0	13.5	12.5	13.0	12.7	15.9	14.8	29.2	18.6	14.79	13
Lower Silesia	14.9	12.3	16.8	16.2	16.3	14.2	13.4	14.8	22.8	17.2	28.2	22.7	17.48	5
Lublin	14.6	14.5	13.6	13.0	19.4	13.5	22.9	14.1	24.9	12.1	30.9	19.5	17.75	4
Lubusz	13.4	11.3	14.3	14.4	10.5	11.6	13.2	13.0	18.1	10.2	19.5	13.6	13.59	15
Mazovia	16.4	13.8	16.1	16.8	17.1	14.5	19.7	16.8	27.3	17.7	37.9	24.7	19.90	1
Opole	16.5	15.2	14.0	15.0	17.6	15.0	12.4	12.6	21.2	11.7	24.4	17.3	16.08	9
Podlaskie	12.7	13.0	15.0	17.7	14.7	15.3	11.5	12.2	23.4	12.3	29.1	23.1	16.67	8
Pomerania	14.3	15.2	10.9	12.5	12.3	12.6	18.1	15.5	25.6	15.4	31.1	23.7	17.27	6
Silesia	16.4	14.2	14.0	13.1	15.7	13.1	15.6	14.3	20.6	13.8	29.5	22.1	16.87	7
Subcarpathian	17.2	16.2	14.8	14.7	14.6	14.2	18.0	15.3	19.7	17.7	28.0	22.9	17.78	3
Swietokrzyskie	14.0	11.6	13.3	12.1	11.1	11.5	10.4	12.2	14.3	11.5	25.8	14.2	13.50	16
Warmińsko-Mazurskie	13.6	12.4	11.9	14.6	10.9	11.3	9.1	9.1	14.9	15.8	31.0	21.0	14.63	14
West Pomerania	13.3	9.8	14.9	14.6	14.1	15.8	11.9	13.7	20.2	12.1	28.4	12.3	15.09	11
Poland	14.9	13.8	14.4	14.3	14.5	13.7	16.1	14.5	21.8	15.4	31.2	20.9		

Source: own compilation based on data from Central Statistical Office of 16.11.2022.

Considering the number of patents granted by the Patent Office of the Republic of Poland (UPRP), the Lublin Region, over the last 12 years, has been granted a total of 1,848 patents, which gives it seventh position compared to all regions in the country. In addition, over the last

five years (since 2017), the number of innovations introduced in the Lublin Region has been gradually increasing, but not exceeding a 10% share in Poland. The percentage of patents granted by the UPRP in all provinces in Poland is presented in Table 3.

**Table 3.**

*Patents granted by the PPO between 2010 and 2021 - total (%)*

Region	Year												Total (N)	Rank
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Greater Poland	6.9	6.5	8.6	9.5	9.4	8.2	7.5	8.3	10.2	8.5	7.5	8.2	2506	5
Kujawsko-Pomorskie	2.5	4.0	3.0	3.3	2.5	3.3	3.1	3.2	3.2	3.3	3.0	3.1	944	11
Lesser Poland	11.8	8.4	8.1	8.8	10.3	10.4	10.4	11.7	11.9	10.7	12.8	11.2	3186	4
Lodz	6.8	6.9	6.4	7.4	7.6	6.3	6.5	7.1	6.4	6.8	7.6	7.0	2065	6
Lower Silesia	10.5	12.9	15.4	15.1	10.7	11.2	10.3	9.3	8.7	8.6	8.8	10.2	3218	3
Lublin	4.0	5.2	5.3	4.1	5.3	7.7	5.7	5.7	5.8	7.3	7.5	8.4	1848	7
Lubusz	0.5	1.0	0.5	0.7	1.3	1.0	0.7	0.8	1.2	0.9	0.8	1.1	266	16
Mazovia	23.5	20.7	21.0	19.6	20.4	20.5	24.1	22.3	18.4	19.0	17.2	17.3	6060	1
Opole	2.0	3.3	4.1	2.2	2.4	2.0	2.2	2.2	2.3	1.6	1.9	2.3	696	12
Podlaskie	0.8	0.6	1.1	1.4	1.2	1.4	1.5	1.0	1.5	2.2	1.6	2.0	431	14
Pomerania	5.8	4.4	4.6	4.2	5.2	4.6	5.0	4.7	4.7	5.4	4.9	3.7	1418	8
Silesia	16.8	16.1	11.5	12.7	15.0	12.4	14.2	12.6	13.0	11.6	13.7	12.7	4006	2
Subcarpathian	2.3	2.7	2.7	3.3	3.1	2.9	2.7	3.4	4.6	4.1	4.9	5.3	1083	10
Swietokrzyskie	1.8	2.4	2.1	1.6	1.3	1.3	1.5	1.5	1.4	2.1	2.1	1.8	516	13
Warmińsko-Mazurskie	1.3	0.7	0.9	1.4	1.3	1.3	1.6	1.5	1.9	1.6	1.1	1.1	403	15
West Pomerania	2.5	4.4	4.6	4.6	3.1	5.3	3.1	4.9	4.9	6.3	4.7	4.3	1331	9
<b>Total (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		
<b>Total (N)</b>	1385	1989	1848	2339	2490	2404	3370	2795	2906	2947	2260	3244		

Source: own compilation based on data from Central Statistical Office of 16.11.2022.

In the latest edition of the survey "Millennium 2020 Index - Innovation Potential of Regions" (Maliszewski et al., 2020, pp. 5, 30, 46), the Lublin Region was ranked 8th, having fallen from last year's classification (Table 4.). The ranking was the sum of the results of five analyzed categories, which, according to the bank's experts, best reflect the innovation potential of the regions. The study took into account labor productivity (shows the current situation of enterprises), expenditure on research and development (is an indicator of innovative activity of enterprises), the number of students (information about the potential of the workforce), the number of people working in research and development (the intellectual base of the Region), as well as the number of issued patents (an indicator of the effectiveness of innovation creation). The cumulative index for the Lublin Region is 53 out of 100 possible points. The weaker result of last year is mainly due to a significant improvement in the potential of other competitive regions rather than a decline in the potential of the Lublin Region. It is mainly due to a worsening position in the criterion of patents obtained and a decrease in labor productivity (while retaining its position from last year's classification) in Lublin Region. It should also be noted that there is a slight difference between Silesia Region, holding the fifth position in the ranking (index equal to 55), and Lublin Region (index equal to 53).

Research conducted by Bank Millennium (Maliszewski et al., 2020, p. 30) also shows that the main driver of innovation in the Lublin Region is a solid academic center. Namely, the share of universities in the total value of expenditure on research and development activities in the

Region is the highest in Poland. In addition, although expenditure on research and development financed by the business sector is significantly lagging the national average (in minus), Lublin Region stands out from other regions with a high percentage of innovativeness-active businesses. It is also worth emphasizing that the Lublin Region has a relatively high percentage of enterprises undertaking cooperation for innovation, which creates a favorable climate for developing innovation potential in the Region.

**Table 4.**  
*Ranking of provinces in the Millennium 2020 Index*

Specification	Innovation criteria*					Index	Ranking position**
	1	2	3	4	5		
Greater Poland	74	35	72	31	61	55	7 ↑
Kujawsko-pomorskie	69	30	60	28	38	45	12 ↓
Lesser Poland	66	100	97	68	82	83	2 =
Lodz	69	44	63	33	66	55	6 ↑
Lower Silesia	85	51	91	56	81	73	3 =
Lublin	51	48	72	29	66	53	8 ↓
Lubusz	72	23	29	15	22	32	16 ↓
Mazovia	100	93	100	100	100	99	1 =
Opole	71	30	47	21	56	45	11 ↑
Podlaskie	58	34	55	25	28	40	13 =
Pomerania	78	65	78	49	51	64	4 =
Silesia	82	34	55	32	72	55	5 ↑
Subcarpathian	53	52	48	38	41	47	10 =
Swietokrzyskie	57	26	40	14	29	33	15 ↑
Warminsko-Mazurskie	66	26	42	20	28	36	14 =
West Pomerania	76	26	51	20	61	47	9 =

Indications:

\* Methodology for calculating index component values:

1. Labor productivity - gross value added generated by one employee (in thousands of PLN)
2. R&D expenditure - R&D expenditure to GDP ratio (in %)
3. post-secondary education - number of students per 10,000 inhabitants
4. employed in R&D - in the business sector per 1000 economically active persons
5. number of patents - arithmetic average of the last three years per 1 million inhabitants

All analyzed components have the same weight

The scale of marks 1-100 (where 100 is given to the best province in all criteria)

\*\* Position relative to last year's classification:

= same position as last year's classification

↑ an increase on last year's classification

↓ decrease from last year's classification

Source: own compilation based on Maliszewski et al., 2020, pp. 4, 5, 46.

The largest city in Eastern Poland and the capital of the Lublin Region is Lublin, located between Warsaw and Poland's eastern border. It is one of the country's most attractive cities for business, which is why it is referred to as the "European Union's Gate to the East" (Lublin City Hall). It is the Region's leading economic, cultural, and administrative center. It is distinguished by a developed scientific and research sphere and a huge academic potential (Podstawka, Suchodolski, 2018, p. 10). The Lublin Economic Uplands strategy is based on cooperation in a quadruple helix (academic centers, public authorities, the business community, and NGOs). It enables the development of individual industries in the Region. In addition, the wide-ranging



exchange of knowledge and experience of the individual parties, the continuous use of their research and development potential, the Region's innovativeness, and the appropriate orientation of civic attitudes lead to the systematic development and improvement of the competitive position of enterprises operating in the Lublin Region (Żyśko, 2018, pp. 103-105).

In the latest report, *European Cities and Regions of the Future 2022/23*, prepared by fDi Intelligence (Foreign Direct Investment, 2022), belonging to the publishing group The Financial Times Ltd., 356 cities from Europe were studied, of which 14 represented Poland and ranked high in various rankings (they were in the top ten). The activity undertaken by fDi Intelligence is mainly benchmarking, focusing on predicting the profitability of long-term investments in Europe and the world. The results presented in the report covered large urban centers (over 250,000 inhabitants), medium-sized urban centers (100-250,000 inhabitants), and small urban centers (less than 100,000 inhabitants) separately and referred to five analyzed categories: economic potential, human capital, cost efficiency, accessibility, and business friendliness. Experts from fDi highlight the number of universities, a highly qualified workforce, the ability of cities to attract foreign investors, and innovation (cities investing in programmers, the IT sector, and future technologies, as well as supporting start-ups, are high on the ranking) (Polish Tourist Organization). In the ranking of small European cities, Lublin was ranked 9th in business friendliness and 6th in foreign direct investment (FDI) strategy, as presented in Table 5.

**Table 5.**

*TOP 10 Small European cities of the future 2022/23 by business friendliness and FDI strategy*

Rank	City	Country
<b><i>Business friendliness</i></b>		
1	Milton Keynes	UK
2	Reading	UK
3	Slough	UK
4	Cluj-Napoca	Romania
5	Cambridge	UK
6	Cork	Ireland
7	Gliwice	Poland
8	Warrington	UK
9	Lublin	Poland
10	Timisoara	Romania
<b><i>FDI Strategy</i></b>		
1	Doncaster	UK
2	Londonderry (Derry)	UK
=3	Plovdiv	Bulgaria
=3	Middlesbrough	UK
5	Braga	Portugal
6	Lublin	Poland
7	Cork	Ireland
8	Debrecen	Hungary
9	Kaunas	Lithuania
10	Gdynia	Poland

Source: compiled from Foreign Direct Investment, 2022, pp. 15, 23.

To sum up, in the Lublin Region, mainly micro-enterprises are being established. In addition, the share of innovative enterprises in the total number of enterprises increases yearly. Therefore, a successive increase in the number of introduced innovations is visible. The Lublin Region has a high percentage of innovativeness-active enterprises and those undertaking cooperation for innovativeness, the carrier of which is a solid academic center. The provincial city, Lublin, has been recognized internationally for its strategy of attracting investors and foreign investment and being a business-friendly place. As a result, Lublin is a region constantly developing its innovative potential and creating conditions for further investment activities.

#### **4. Specifics of innovative organizations in the Lublin Region on the example of start-ups - results of own research**

Lublin's start-up ecosystem is constantly growing. The province supports innovative entrepreneurs and is a friendly place to do business, according to the 2017 Startup Poland Foundation report (Beauchamp et al., 2017, pp. 78-79). A report from 2018 (Beauchamp et al., 2018, pp. 6, 24) shows that Lublin is among the top cities with a growing number of start-ups that focus mainly on big data and analytics. In the 2019 report (Krysztofiak-Szopa, Wisłowska, 2019a, pp. 6, 13, 39, 67, 69), Lublin achieved high positions in the leading rankings in the categories of cities with the largest start-up ecosystems in the country, cities with the highest concentration of start-ups, cities with the fastest pace of start-up development and regions with the highest chance of raising funding. In turn, according to the report "The Polish Tech Scene. 5 years" by the Startup Poland Foundation in 2019 (Krysztofiak-Szopa, Wisłowska, 2019b), Lublin ranked 4th among the most significant Polish start-up ecosystems. It also appeared in the top positions in the three subcategories of the report: first place as the Region with the highest perceived ability to raise funding by respondents, second place as the city with the highest growth in the number of start-ups, and third place in the subcategory related to the concentration of start-ups in terms of population.

Research in the Lublin Region in 2020-2021 targeted 350 start-ups. The sample was selected purposefully with the assumption that a start-up is an organization that has at least one distinguishing feature - it is at an early stage of development, goes through the first phase of its life cycle, introduces innovative solutions dynamically adapting to market changes, cooperates with the environment effectively using the synergy effect, and operates under conditions of extreme uncertainty taking a high risk. The survey questionnaire was anonymous, consisting of open and closed questions with a cafeteria of answers (where 1 - not important and 5 - very important) and using a five-point Likert scale (where 1 - strongly disagree and 5 - strongly agree). It was distributed to respondents via the Internet. Start-up founders were asked, among

other things, to indicate the number and type of innovations introduced in the regional, national, European, and international markets. Respondents were also asked to assess their start-up's innovativeness and the factors influencing it. The survey also asked about the importance of key performance indicators in the strategy of the surveyed start-ups. The research process yielded 97 correctly completed questionnaires.

Considering the innovation characteristics of start-ups in the Lublin Region (Table 6), the study shows that 66.8% of respondents have 1-3 innovations, and a much smaller percentage of start-ups introduce four and more innovations (3.2-1.6%). In comparison, 26.7% of respondents have not yet decided to implement any innovative solutions. Most innovations are introduced on the domestic market (36.5%), a smaller percentage is on the international (25.5%) and regional market (23.4%), and the least innovations are introduced on the European market (14.6%). Many of the founders of Lublin start-ups choose product innovations (55.6%), a smaller percentage introduce process innovations (24.9%) and marketing innovations (11.6%), and the smallest percentage introduce organizational innovations (7.9%). In general, most of the surveyed entities (73.6%) claim that their start-up is innovative (positive opinions), only 19.8% have a completely different opinion (negative opinions), and less than 7% are unable to assess the innovativeness of their company (6.6% - I have no opinion).

**Table 6.**

*Characteristics of start-ups' innovativeness as assessed by respondents (N) in the Lublin Region*

Specification	Specifics of the market				Total (N)	Total (%)
	Regional	National	European	International		
<b>Number of innovations</b>						
0 innovations	10	5	17	18	50	26.7
1-3 innovations	28	47	19	31	125	66.8
4-6 innovations	2	1	1	2	6	3.2
7-9 innovations	1	1	0	1	3	1.6
10 and more innovations	1	1	0	1	3	1.6
					187	100.0
<b>Share of innovations introduced</b>						
Total (N)	32	50	20	35	137	100.0
Total (%)	23.4	36.5	14.6	25.5	<del>137</del>	100.0
<b>Type of innovation</b>						
products	31	45	22	36	134	55.6
procedural	15	19	10	16	60	24.9
marketing	6	11	5	6	28	11.6
organizational	5	6	3	5	19	7.9
					241	100.0
<b>My start-up is innovative*</b>						
negative opinions	7	11	11	10	39	19.8
I have no opinion	0	2	4	7	13	6.6
positive feedback	39	45	29	32	145	73.6
					197	100.0

Explanations:

\* negative opinions - "strongly disagree + rather disagree"; positive opinions - "rather agree + strongly agree".

Source: own compilation based on surveys conducted.

When selecting factors that have a significant impact on a start-up's innovativeness (Table 7), respondents most often indicated the high potential of the company's employees (mean 4.18), availability of qualified staff (mean 4.03), customers (mean 3.95), free internal communication (mean 3.95) and flexible organizational structure (mean 3.90). On the other hand, when considering factors that had the most negligible impact on innovation, founders of start-ups in the Lublin Region most often indicated a regional pro-innovation policy (mean score of 3.13), a national pro-innovation policy (mean score of 3.22), an incentive system supporting pro-innovation attitudes of employees (mean score of 3.24), availability of a market for materials (mean score of 3.33) and technical equipment of the company (mean score of 3.38).

**Table 7.**

*Factors influencing the innovativeness of start-ups in the Lublin Region*

Categories answers	Ratings* (%)					Average ratings**	Rank
	1	2	3	4	5		
Customers	3.1	10.3	10.3	41.2	35.1	3.95	3
Leadership qualities	1.0	6.2	39.2	27.8	25.8	3.71	8
High potential of the company's employees	2.1	2.1	17.5	33.0	45.4	4.18	1
Free internal communication	1.0	6.2	23.7	35.1	34.0	3.95	4
Flexible organizational structure	1.0	6.2	20.6	46.4	25.8	3.90	5
Enough financial resources	5.2	11.3	33.0	28.9	21.6	3.51	10
Technical equipment of the company	4.1	17.5	32.0	28.9	17.5	3.38	12
Marketing shaping demand for an innovative product	4.1	13.4	26.8	39.2	16.5	3.51	11
Access to the technology market	4.1	4.1	19.6	46.4	25.8	3.86	6
Access to the materials market	7.2	17.5	24.7	36.1	14.4	3.33	13
Availability of qualified staff	1.0	4.1	21.6	37.1	36.1	4.03	2
Cooperation with the scientific community	11.3	7.2	18.6	33.0	29.9	3.63	9
Regional pro-innovation policy	10.3	13.4	38.1	28.9	9.3	3.13	16
Pro-innovation national policy	11.3	9.3	36.1	33.0	10.3	3.22	15
Motivation system to support pro-innovative attitudes of employees	8.2	8.2	46.4	25.8	11.3	3.24	14
An innovation-friendly culture	1.0	6.2	30.9	42.3	19.6	3.73	7

Explanations:

\* ratings: 1 - strongly disagree, 2 - rather disagree, 3 - no opinion, 4 - rather agree, 5 - strongly agree.

\*\* rating scale: 1-5, where 5 - max.

Source: own compilation based on surveys conducted.

Respondents from the Lublin Region rated the importance of performance factors (Key Performance Indicators, KPIs) in their start-up's strategy very highly (over 74% each) (Table 8). Based on the collected information, it should be stated that the founders of the surveyed start-ups put the most significant emphasis on product development (92.8% of positive responses) and profitability (83.5% of positive responses). They put less emphasis on strengthening the motivation and development of employees (76.3% of positive responses) and strengthening the organizational culture (76.3% of positive responses). In comparison, the minor emphasis is on organizational development (75.3% of positive responses) and rapid growth (74.2% of positive responses).

**Table 8.***Importance of key performance indicators in start-up strategy*

Categories answers	Ratings* (%)		Average ratings**	Rank
	negative	positive		
Rapid growth	7.2	74.2	3.92	6
Profitability	5.2	83.5	4.20	2
Product development	1.0	92.8	4.47	1
Organizational development (processes, structures, communication, etc.)	5.2	75.3	3.99	5
Strengthening staff motivation and development	2.1	76.3	4.04	3
Strengthening the organizational culture (norms, values, etc.)	4.1	76.3	4.01	4

Explanations:

\* negative evaluations "not important + rather not important"; positive evaluations "rather important + very important".

\*\* rating scale: 1-5, where 5 - max.

Source: own compilation based on surveys conducted.

The surveyed start-ups were also asked to indicate the number of patents they had obtained. Unfortunately, only about 8% of them declared that they had a patent, mainly granted individually to the company. However, it should be emphasized that more than 70% of respondents plan to implement innovations in the next three years, mainly deciding on product innovations in the number of 1-3 innovations.

Given the above, it should be concluded that start-ups from the Lublin Region are constantly developing their innovative activity, focusing mainly on the domestic market and offering, most often, product innovations. Most of the surveyed founders claim that their start-up is innovative and, at the same time, makes this innovation dependent on the high potential of their employees, availability of qualified staff, and customers, free internal communication, and a flexible organizational structure. In the strategy of the surveyed start-ups, the most crucial focus is on product development and achieving satisfactory profitability. It should also be emphasized that the surveyed start-ups plan to implement innovative solutions, mainly in product innovation, in the coming years of their activities.

## 5. Conclusion

The innovative potential of a region is the ticket to the creation of hitherto unknown solutions by today's entrepreneurs. It encourages out-of-the-box decision-making, obliges the creation of innovative organizations bringing creative products/services to the market, and attracts wealthy and experienced investors. As a result, it contributes to socio-economic development, upgrades hitherto obsolete technologies, and thus ensures social well-being. The study shows that in the Lublin Region:

1. Mainly micro-enterprises are being set up.
2. The share of innovative enterprises in the total number of enterprises is increasing - a successive increase in the number of innovations introduced.
3. There is a high proportion of innovation-active enterprises and cooperation for innovation (supported by a solid academic center).
4. The provincial city of Lublin was recognized internationally for its strategy of attracting investors and foreign investment and being business-friendly.
5. Start-ups constantly develop their innovation activities (focusing on the domestic market and offering product innovations).
6. Start-ups depend for their innovation on the high potential of their employees, the availability of qualified staff, and customers, free internal communication, and a flexible organizational structure.
7. The focus on product development and achieving satisfactory profitability is paramount in the strategy of the start-ups surveyed.
8. Start-up founders say their business is innovative and plan to implement innovative solutions, mainly in product innovation.

Therefore, many initiatives supporting creative entrepreneurs setting up small businesses should be created in the Lublin Region. In turn, the entrepreneurs of the Lublin Region, in their strategy, should undertake actions favoring the local community. They should create solutions to improve social welfare and reduce the poverty level in the Region so that the least affluent part of society can access modern solutions and opportunities for personal development. In addition, entrepreneurs should also target foreign markets, which will contribute to the Region's international visibility.

The study shows that Lublin Region is constantly developing its innovative potential, thanks to the growing number of small, thriving companies focused on innovation. Despite the unfavorable economic conditions in Eastern Poland, Lublin Region creates conditions for further investment activities and favors new entrepreneurs.

The study is not exhaustive and is a premise for further in-depth research. The subject of this publication is of interest to the world of science, business, and public administration. Unfortunately, the publication also has some limitations, mainly related to acquiring empirical material. The research period coincided with the COVID-19 pandemic, meaning that entrepreneurs were mainly focused on survival and were not interested in participating in the study. The shift to remote working contacted them completely impossible. A further research area could be the analysis of the factors influencing innovation and thus success mainly for the dominant in the overall number of entities - micro-enterprises.

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