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*Evaluation of the Functioning of Start-Ups  
in the Lublin Voivodeship*

**Keywords:** start-ups; start-up founders; entrepreneurship; early stage companies

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**Abstract**

**Theoretical background:** Due to dynamic civilization, technological, economic and social changes, modern entrepreneurs focus on creating innovative solutions with a high risk of failure. They adjust the specifics of their activities and the way of managing them to the market needs. As a result, entrepreneurs choose modern business models, focusing on a creative approach to their business. Operating in a turbulent environment, they flexibly adapt to the prevailing situation, while focusing on cooperation and sharing knowledge, creating start-up organizations.

**Purpose of the article:** The aim of the publication is to identify the characteristics of start-ups operating in the Lublin Voivodeship based on the following criteria: gender, age, education and experience of the founder in running a start-up, period of functioning on the market and size of the start-up, stage of its development, industry and market in which it generates income and attitude to innovation.

**Research methods:** The publication is based on research conducted in 2020–2021 for the doctoral dissertation. The sample for research was purposefully selected. The survey questionnaire was anonymous, it consisted of open and closed questions as well as a record, it was sent to respondents via the Internet. It was addressed to 350 start-ups from the Lublin Voivodeship, 97 of which were obtained from correctly completed questionnaires.

**Main findings:** The founders of start-ups in the Lublin region are mainly young men with higher education who have no experience in running a start-up. The surveyed start-ups create a flexible organizational structure, employ a small number of employees, operate on the market for a short time, are at an early stage of development, focus on the regional and national market, constantly introducing innovations. Start-ups in the Lublin region should move towards more modern solutions and focus on expansion into foreign markets. On the other hand, the founders of start-ups in the Lublin region should compensate for the lack of experience by engaging in numerous initiatives developing entrepreneurial attitudes. Entrepreneurs in the Lublin region should also constantly monitor the situation on the market (analyze opportunities and threats) by creating innovative solutions tailored to customer needs and enabling an increase in the level of social welfare.

## Introduction

In the era of today's civilization changes, progressive globalization and numerous socio-economic changes, contemporary organizations operate in a turbulent environment, making extremely risky decisions. All activities of entrepreneurs, especially those introducing innovative solutions to the market, are subject to high uncertainty and may be associated with failure. The way of managing the enterprise, the specificity of the conducted activity and the focus on introducing innovations is gaining significance. As a result, decentralization, flattening of organizational structures, networking of relationships, teamwork, and the leading importance of knowledge are gaining popularity. Organizations that meet these criteria include start-ups, which are nowadays becoming the object of interest of many social environments.

The purpose of this paper is to identify the characteristics of start-ups operating in the Lublin Voivodeship based on such criteria as: gender, age, education and experience of the founder in running a start-up, period of operation on the market and size of the start-up, stage of its development, industry and the market where it generates revenues, and the attitude towards innovation. Despite the unfavorable socio-economic situation of Eastern Poland, the Lublin Voivodeship is constantly developing, making full use of the potential of the region's resources. The possibility of using EU funds and the occurrence of various initiatives supporting entrepreneurship give the opportunity for the development of innovative companies and contribute to the growing position of the Lublin region against the background of the entire country.

The study reviews the available literature on the subject, thanks to which the process of creation and the essence of a start-up organization is presented. The empirical part of the publication was based on research conducted in 2020–2021 for the doctoral dissertation. In the discussion section, based on the data in the reports prepared by the Startup Poland Foundation and the Polish Agency for Enterprise Development from 2021, selected features of Lublin and domestic start-ups were compared, which may contribute to further, in-depth analyses.

Literature review

The dynamic changes taking place in the environment of modern organizations, the progressing globalization processes, the rapid pace of development of modern technologies, as well as the continuous increase in the importance of information resources contribute to changing the shape of the modern economy (Janicki & Słupska, 2017, p. 358), and, thus, they cause a completely new look at the value generated for the customer. At the same time, they force contemporary enterprises to dynamically and flexibly develop their innovative potential (Sekliuckienė et al., 2018, p. 126), create new values, be constantly active, assimilate new ideas contributing to survival and success on the market (Kalisz & Szyran-Resiak, 2019, p. 484). Companies are moving away from rigid and impenetrable borders, striving for freedom of movement between them (Ashkenas, 1998, pp. 123–126). They focus on autonomous teamwork open to internal and external collaboration (Kałowski & Wysocki, 2014, p. 5). The new era of the digital enterprise requires the use of scalable business models and technologies that contribute to understanding the thoughts and needs of potential customers (Saura et al., 2019, p. 917). As a result, innovative solutions, a creative approach to running a business and modern business models are becoming more and more important. Organizations that fit into the presented values are in particular start-ups. They focus on using modern solutions to improve existing or create new, hitherto unknown products and services (Bijańska et al., 2016, pp. 129–130). Figure 1 shows the process of creating a start-up organization.

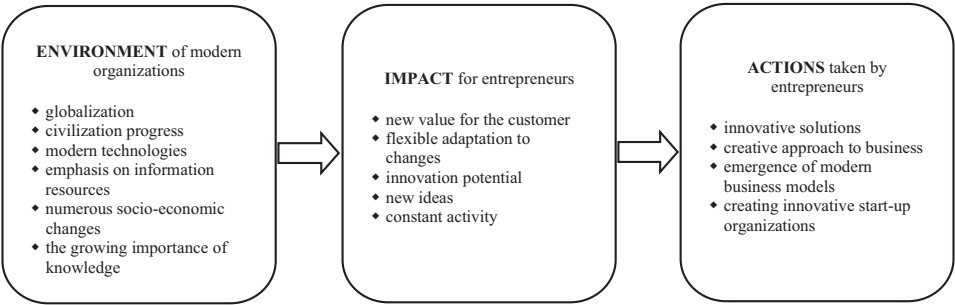


Figure 1. The process of creating a start-up organization

Source: Author’s own study.

The term “start-up” enjoys a growing interest in the business environment and science. The group of researchers who try to describe and capture the specificity of this phenomenon is dynamically growing. However, this is not an easy task because the definition of a start-up is still not precisely defined (Skala, 2017, p. 33). Start-up is a relatively young concept that is difficult to define unequivocally. The original meaning of the word “start-up” was created for any form of business in the early

stages of development (Breschi et al., 2018). Undoubtedly, it is one of the forms of innovative organizations that arose because of the dynamic development of technology, and, thus, the growing innovation of enterprises and the increasing importance of knowledge in the economy.

According to the considerations of Blank and Dorf (2012, p. 19), a start-up is “a temporary organization engaged in the search for a scaled, repeatable and profitable business model”. Additionally, according to Ries (2011, p. 29), is “an institution created with a view to building new products or services under conditions of extreme uncertainty”. Practitioners say that the start-up is a young company (Damodaran, 2012, pp. 4–5), an organization creating new solutions (Thiel & Masters, 2014), looking for the perfect match on the product-market level (www1), as well as a venture, which grows extremely fast (Graham, 2012). In turn, according to scientists, a start-up is “a newly formed organization that defines and tests its business assumptions” (Glinka & Pasieczny, 2015) and implements innovations burdened with an increased level of risk (Gemzik-Salwach, 2014). A start-up is also an organization at an early stage of development that is looking for an optimal business model, has a high growth potential (Łuczak, 2014) and uses external financing (Bursiak, 2013). Weiblen and Chesbrough (2015) recognize a start-up as an innovative, dynamic technological venture. Salamzadeh and Kawamorita Kesim (2015) defined start-up companies as newly born companies that struggle for existence. The Polish Agency for Enterprise Development (PARP) defines a start-up as “an entity represented in the survey by a person who is at the stage of setting up a company or runs it for up to 3.5 years and uses technologies/methods of work that are available on the market for no longer than 5 years to produce their products/services” (Nieć, 2019, p. 4).

Kariv (2013) emphasizes that start-ups belong to organizations that are in the first phase of development and are focused on using modern technological and IT solutions. In turn, Čalopa et al. (2014) consider a start-up to be a new enterprise, focusing on technologically advanced projects with high development potential, which is in the phase of growth and market research. As the presented examples show, many researchers, trying to explain the importance of start-ups, connect them with a project or a project concept, while pointing to different phases of its implementation. As a result, according to Czekaj and Ziębicki (2015, p. 363), start-ups should be classified as young companies (mostly technological ones) that develop products/services depending on the needs of the market, while creating new demand and creating new markets, thanks to which they can achieve spectacular success. In addition, according to Laszuk (2017, p. 25), “a start-up is an entrepreneurial venture that is in the phase of searching for and testing its business model and offered values on the market, most often financed from funds alternative to the banking sector due to difficulties in estimating the real risk”. It should be noted that the entrepreneurial venture is an entrepreneur’s activity focused on generating benefits in the future, it is burdened with high uncertainty, is at the initial stage, flexibly adapts to market changes, most often using own funds.

The literature on the subject also presents specific features that distinguish start-ups from other companies on the market. Start-ups are most often identified with organizations that do not have an operational history, and their activity in terms of the technology introduced and the market served is subject to high uncertainty (Giardino et al., 2014). According to Kühnapfel (2019), start-ups achieve a competitive advantage thanks to innovation in the field of product, technology, business and customer acquisition. Through the partnership of founders and a flat organizational structure, they can dynamically respond to changes, which gives them great bargaining power and stands out with a fast growth rate. Unfortunately, the frequent lack of equity means the necessity to raise capital from potential investors, which is associated with high risk, uncertainty of business and difficult predictability of the future. According to the considerations of Skala (2017, p. 38), start-ups are characterized by very limited resources, strong leadership, initially uncertain demand, as well as the use of advanced digital technologies and high operational capacity of the entire team, enabling the testing of previously unknown business models. In turn, Adamczyk (2016) points out that start-ups strive to create new value for potential customers by using an innovative product/service, using external financing, and looking for various forms of support to conduct market experiments.

Therefore, based on literature reports on the definition and characteristics of start-ups, Figure 2 presents the specificity of start-ups and the environment in which they operate. Undoubtedly, they are organizations that require dedication and special attention from the founders. What is important here is the founder's experience, the ability to build relationship capital and strong leadership focused on the success of the venture. When introducing innovative solutions to the market, entrepreneurs not only incur high financial outlays, but also take a huge risk of failure and are forced to constantly monitor changes in the environment.

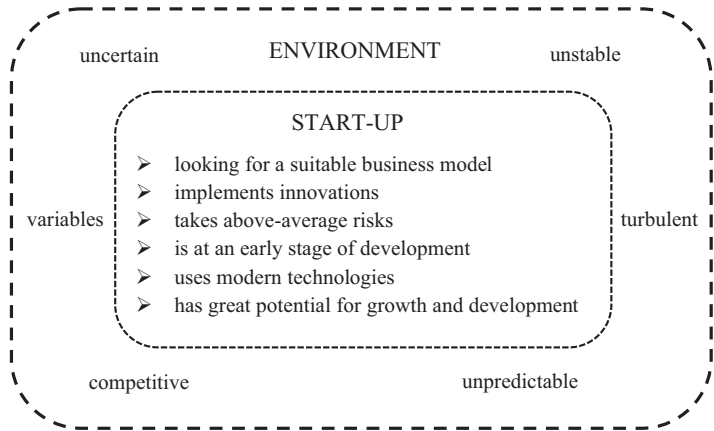


Figure 2. Specifics of start-up organization

Source: Author's own study.

Research methods

The research was carried out in the years 2020–2021 using a survey questionnaire, which was addressed to 350 start-ups from the Lublin Voivodeship. The sample was selected deliberately, assuming the presence of at least one feature that characterizes start-ups. A start-up has been recognized as an organization that goes through the first phase of its life cycle, is at an early stage of development, dynamically adjusts to market changes by introducing innovative solutions, as well as cooperates with the environment and effectively uses the synergy effect, operating in conditions of uncertainty and taking risks.

The survey questionnaire was anonymous and consisted of open and closed questions, as well as a record. The questionnaire was sent to the respondents via the Internet in a specially prepared electronic questionnaire, sent via a link.

In the survey questionnaire, the founders of start-ups were asked to describe their company, considering the age of the start-up, year of establishment, size, legal form, stage of its development, number of management levels, industry, market on which it generates revenues, as well as attitude to innovation. The questions were also asked about the number of women and men working in the start-up, as well as about the specific characteristics of the respondents, such as: age, gender, education and experience in running a start-up. As a result, 97 correctly completed questionnaires were obtained in the research process.

Results

The conducted research shows (Figure 3) that 68% of the founders of start-ups in the Lublin region are men (36.1% are in the 26–40 age group, and 21.6% of the surveyed men – 41–50 years old). The smallest percentage of men setting up start-ups are up to 25 (3.1%) and over 50 (7.2%). Women constitute only 32% of the respondents, and most of them (21.6%) are 26–40 years old. Start-up founders are least likely to be aged up to 25 (1.0%), 41–50 (7.2%) and over 50 (2.1%).

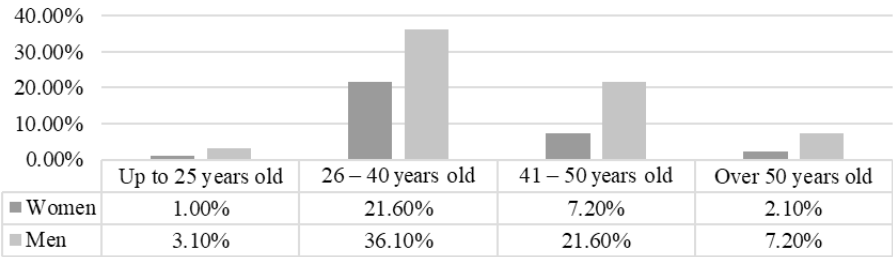


Figure 3. Respondents by gender and age

Source: Author’s own study.

Research shows that the respondents most often have higher education – completed master’s studies (62.9%). A smaller percentage are founders of start-ups with at least a doctoral degree (21.6%) and secondary and higher education – completed undergraduate studies (15.5%). Additionally, a significant number of respondents (64.9%) have not run a start-up before and this is their first venture of this type. 15.5% of respondents had experience in running one start-up, and 19.6% of respondents ran two or more start-ups.

The surveyed entities were 100% private property. Over 90% of them were characterized by one level (66.0%) or two levels (29.9%) of management. Most of the surveyed start-ups were established in 2020 (38.1%), 2019 (25.8%) and 2018 (12.4%). Fewer start-ups surveyed were established in 2017 (9.3%) and 2016 (7.2%), and the least in 2015–2013 and 2000 (3.1–1.0%). Considering the size of the enterprise, over 80% of start-ups employed up to 9 employees, and nearly 20% – 9–49 employees. The surveyed entities did not employ more than 49 employees. The presented dependencies are shown in Figure 4.

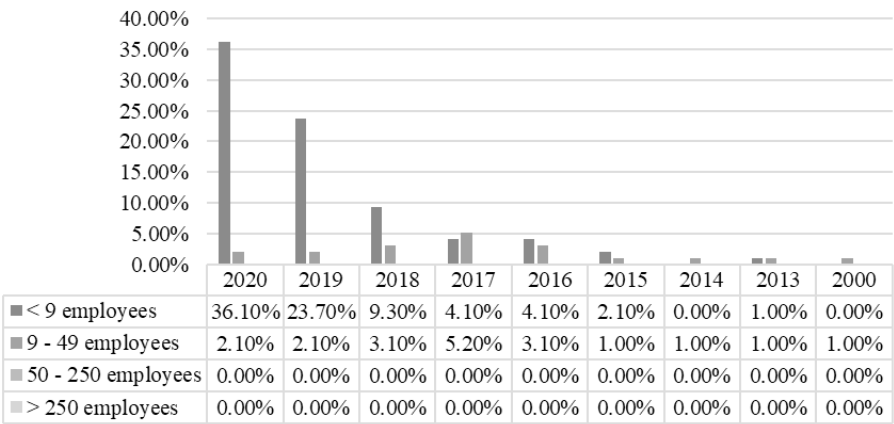


Figure 4. The size of start-ups and the year of establishment

Source: Author’s own study.

Based on the research (Figure 5), it should be stated that nearly 86% of the surveyed start-ups operated on the market for up to 3 years. The questionnaire also asked the respondents about the stage of development of their start-up, asking them to choose:

Stage 1: Problem-solution fit, i.e. formulating business model assumptions and team building.

Stage 2: Solution-product fit, i.e. intensive product development, company registration, prototyping, first revenues and/or users.

Stage 3: Product-market fit, i.e. stable sales and user base, a functioning business model.

Stage 4: Scaling/expansion, i.e. rapidly growing number of customers and/or users and revenues.

More than half of the respondents (54.6%) indicated the second stage of the start-up's development. About 20% of responses concerned the third stage (20.6%) and the first stage (19.6%). The lowest number of responses concerned the fourth stage of the start-up's operation (5.2%). Research shows that start-ups operating on the market for less than 1 year are in most cases at the second or first stage of development, and only a few of them go through the third stage. Start-ups operating on the market for 1–3 years are already more experienced, although most of them are at the second stage, there are entities declaring the third or even fourth stage of development. In turn, the respondents who have been running their business for 4 or more years, in most cases, are in the third or fourth stage.

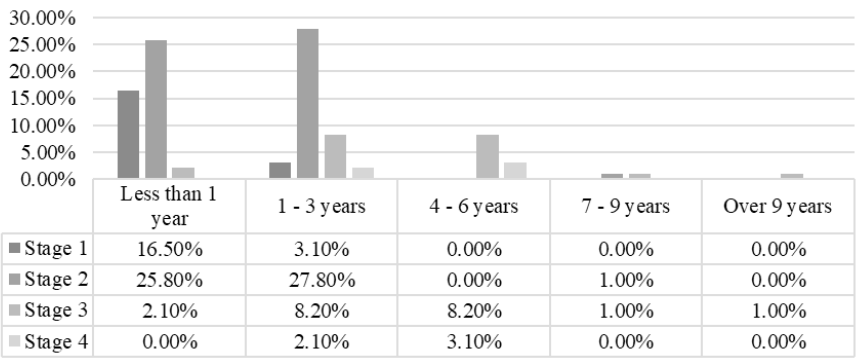


Figure 5. The period of operation of start-ups and the stages of their development

Source: Author's own study.

It analyzes the stage of development of a start-up and its founder's gender (Figure 6), approx. 48.5% and the first (approx. 24%) of the development process. The smallest increase in respondents runs a start-up at the fourth stage of development (women – approx. 3%, men – approx. 6%).

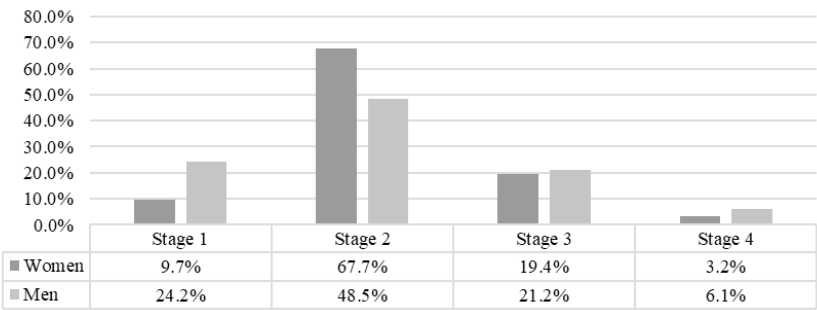


Figure 6. Stages of development of start-ups and gender of respondents

Source: Author's own study.

Considering the period of operation of a start-up on the market (Figure 7), in the case of women, more than half of the respondents (approx. 55%) run a start-up operating on the market for 1 to 3 years. The share of start-ups operating for less than one year is also relatively high (almost 39%), while the share of start-ups operating on the market for 4 to 6 years is small (approx. 6.5%). In the case of start-ups run by men, those operating on the market for less than one year (nearly 47%) and for 1 to 3 years (nearly 35%) dominate. Approx. 13.5% are start-ups operating for 4 to 6 years, while the share of start-ups operating on the market for over seven years is negligible (approx. 4.5%).

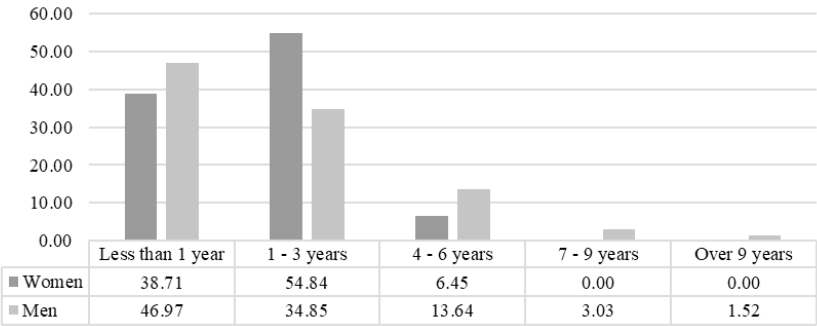
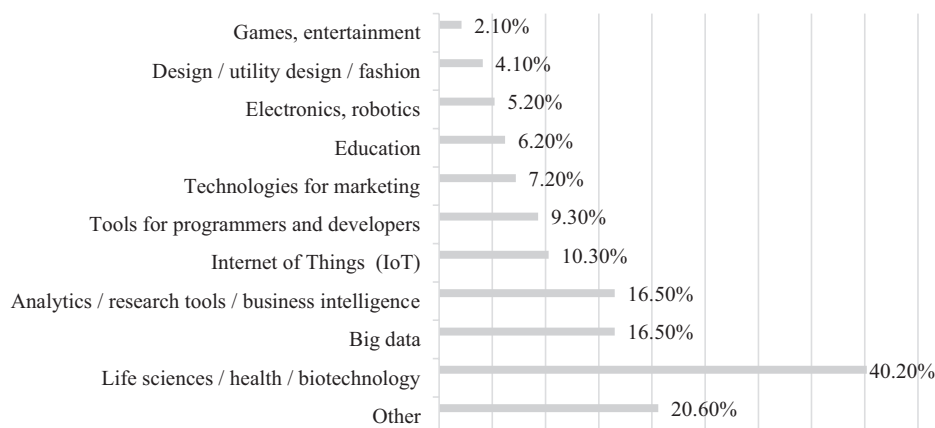


Figure 7. The period of operation of start-ups and the gender of respondents

Source: Author's own study.

Start-ups in the Lublin region most often deal with industries including life sciences / health / biotechnology (40.2%). Less often they decide on big data (16.5%), analytics / research tools / business intelligence (16.5%), the Internet of Things

(10.3%) and tools for programmers and developers (9.3%). In turn, the least interest (7.2–2.1%) concerns, *inter alia*, technologies for marketing, education, robotics, design and entertainment. These dependencies are presented in Figure 8.



**Figure 8.** Industry that start-ups deal with

Source: Author's own study.

The research also shows that start-ups generate their revenues in the domestic (66.0%) and regional (28.9%) markets, much less often they focus on the global (14.4%) and European (9.3%) markets. Additionally, when asked about their attitude to innovation, about 70% of them declare their implementation within the next 3 years, and nearly 80% of respondents introduce innovations.

To sum up, start-ups in the Lublin Voivodeship are usually established by young men aged 26–40, most often with higher education (graduated from master's studies) and without experience in running a start-up. Start-up founders most often create a flexible organizational structure (one management level), employing mainly up to 9 employees and operating on the market for up to 3 years. The analyzed start-ups are mainly in the second stage of development. In addition, research shows that start-ups founded by women are most often in the second stage of development and operations on the market from 1 to 3 years. In turn, start-ups run by men are most often in the second stage of development and have been operating on the market for less than one year. Start-ups from Lublin deal with natural sciences / health sector / biotechnologies, generating their revenues on the domestic and regional market. In addition, most respondents not only introduce innovations, but also plan to implement new ones soon.

## Discussions

An interesting starting point for further, in-depth analyses seems to be comparing selected features of start-ups in the Lublin Voivodeship with start-ups operating in Poland. Preliminary observations are presented below, based on the research carried out in the study and the results in reports prepared by external institutions.

Research conducted in the Lublin Voivodeship shows that start-ups are established by young men aged 26–40, most often with higher education. According to the report of the Startup Poland Foundation (Dziewit, 2021, pp. 8–9), the largest group of start-up founders in Poland are 30-year-olds (43%) and people aged 20–30 (37%), 40-year-olds (13%), and the least of those over 50 (4%). On the other hand, the report prepared by PARP (Tarnawa, 2021, p. 95) shows that the largest age group of Polish start-ups founders are people aged 25–44, mainly men (62%). Based on the data of Transparent Data (Dziewit, 2021, p. 19), it should be stated that in Poland, women occupy only 31.5% of CEO positions in business entities, and Statista.com data (Dziewit, 2021, p. 19) prove that 20% of start-ups in the world have at least one woman among their founders. Considering education (Tarnawa, 2021, p. 97) – the majority are people with at least higher education (over 60%), and about 20% have secondary education.

Start-ups from the Lublin Voivodeship have been operating on the market for up to 3 years. They are mainly at the second stage of development (solution-product fit, i.e. intensive product development, company registration, prototyping, first revenues and/or users). The authors of the “Report Polish Start-ups 2021” (Dziewit, 2021, p. 8) noticed an increase in the percentage of start-ups operating on the market for one or two years (now 34%), and start-ups operating for 3–4 years (currently 28%) and 5–10 years (now 18%) compared to the previous year. On the other hand, the percentage of start-ups established over the last year has decreased (currently 19%). Analyzing the stage of development of a start-up, research conducted by the Global Entrepreneurship Monitor (Tarnawa, 2021, p. 99) shows that nearly 30% of respondents strengthen their position on the market, 20% work on a product / service (prototypes), and 19% are occupied by entering the market with a product / service. A smaller percentage – 12% focus on further development and expansion on the market, similarly 11% of respondents declare work on the initial concept of a product/service and creating assumptions for the business model. In turn, the smallest percentage of respondents (9%) deals with the stabilization of the company and the adopted business model.

Paying attention to the industry that Lublin’s start-ups deal with, natural sciences/ health sector/ biotechnologies should be indicated. In turn, the market on which they generate their revenues is the national and regional market. According to the research prepared by the Startup Poland Foundation (Dziewit, 2021, p. 26, 77, 80), more than one fifth of Polish start-ups

(22%) deal with AI (artificial intelligence) and machine learning, a smaller part of them chose e-commerce (18%), medtech (13%), education (12%), analytics, research tools, business intelligence (12%) and productivity, management (10%). Less than 10% of responses were achieved by industries such as: big data (9%), industry 4.0 (9%), fintech, insurtech, financial services (9%), Internet of Things (8%), smart city, martech (7% each) and sport (6%). As for the markets where start-ups generate revenues – research shows that the domestic market is already too small for them, which is why the clear majority of them (78%) plan to expand into foreign markets. Over 80% of respondents plan to expand their activities to European Union countries (85%), over 50% decide to introduce their products/services to the USA and Canada (53%), and 40% choose other European countries when deciding to expand abroad.

Considering the characteristics of start-ups in the Lublin region and the results of research by other authors (including Polish start-ups) quoted above, there are few differences. In general, start-ups from the Lublin Voivodeship have great development potential, they are founded by young educated entrepreneurs, although they should decide to expand into foreign markets and create solutions focused on modern technologies. The above observations may contribute to developing conclusions and recommendations for further development and greater recognition of start-ups from the Lublin Voivodeship. In addition, they contribute to further in-depth research in the analyzed area.

## Conclusions

A modern approach to business, dynamic technological changes and rapidly changing customer preferences result in the creation of innovative and, at the same time, extremely risky projects, the priority of which is the implementation of previously unknown products/services. Therefore, for start-up founders, success in business is not only an individual achievement, but also provides opportunities for development and a better perspective for the attractiveness of a given region, namely many dynamically developing start-ups in a given area prove technological advancement, high innovation, and indicate socio-economic progress. As a result, it attracts more and more investors who want to invest significant financial expenditures, thanks to which modern solutions are created that are favourable to the environment and local community. Undertaking innovative projects also increases the prestige and potential of a given region, contributing at the same time to an increase in the number of entrepreneurs from the country or the world (usually with more capital) who want to start a business. This is the case of the Lublin region – thanks to dynamically developing start-ups, its position is constantly growing compared to the rest of the country.

In connection with the above, based on the analyzes carried out, the following conclusions and recommendations should be indicated:

1. Start-ups in the Lublin region are most often established by men aged 26–40 with higher education (graduated from master's studies), who have no experience in running a start-up.

2. Future entrepreneurs should compensate for the lack of experience in running a business by engaging in various activities and initiatives developing entrepreneurial attitudes, participating in training courses on setting up and running a business, as well as acquiring internships in enterprises of a similar profile.

3. The founders of start-ups in the Lublin region create a flexible organizational structure (one management level), employ up to 9 employees, operate on the market for up to 3 years, are at the second stage of development, deal with the life sciences / health sector / biotechnologies, operate on the domestic market and region, constantly innovating.

4. Start-ups founded by both women and men are most often at the second stage of development. The largest percentage of start-ups run by women have been operating on the market for 1 to 3 years, while those run by men have been operating for less than 1 year.

5. Despite the unfavourable socio-economic situation of Eastern Poland, the specificity of start-ups in the Lublin region does not differ significantly from national standards, which may indicate the high potential of entrepreneurs setting up such projects, the opportunities offered by the natural resources located in this area, as well as favourable financial support from websites of investors, state and local authorities.

6. Start-ups in the Lublin Voivodeship should move towards more modern solutions (artificial intelligence, machine learning, e-commerce), constantly analyzing market needs and trends prevailing in the country and in the world. They should also focus on expansion to foreign markets, which will enable them to develop, build a previously unknown capital of relationships and contribute to the exchange of knowledge and resources on an international or even global scale.

7. Entrepreneurs should constantly monitor the situation on the market (actions of competitive companies, socio-economic changes, changing needs of potential customers, political situation in the country and abroad), and thus notice opportunities and threats, creating innovative solutions that will generate unique value for the customer and will contribute to increasing the level of social welfare in a given region.

8. Entrepreneurs in the Lublin region should take full advantage of the opportunities offered by government and local government programs that support the development of business potential and commercialization of innovations, as well as enabling the acquisition of funds and providing substantive assistance in the field of running a business.

This study does not cover the entire spectrum of topics related to the undertaken area of research. It is only an introduction to further in-depth analyzes of start-ups in the Lublin Voivodeship. The issues discussed in the study are still open, still relevant and interesting for both current and future entrepreneurs who decide to adopt a modern approach to their business. Another area of research may be the identification of

factors enabling success in start-ups. A continuation of the research presented in the study could also be an analysis of the innovative potential of start-ups operating in the Lublin Voivodeship. Another research area may be the identification of factors enabling success in start-ups, as well as the analysis of the innovative potential of start-ups operating in the Lublin Voivodeship. The research undertaken in the study is also a starting point for an advanced comparison of start-ups in Lublin with start-ups operating throughout the country.

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