

## THE NATURE OF STARTUPS: THEORETICAL ASPECTS AND AN ANALYSIS OF A SURVEY OF POPULATION IN LATVIA

    
\*Aija Vonoga, Anda Zvaigzne, Aija Cerpinska

Rezekne Academy of Technologies, Latvia

\*Corresponding author's e-mail: aija.vonoga@rta.lv

### Abstract

A review of the available literature revealed that there was no information about public opinions on startups; therefore, the authors set the main aim to theoretically examine the nature of startups and identify the opinions of residents on startups in Latvia. The specific research tasks were defined as follows: 1) to conduct a theoretical review of literature on startups and the ecosystem thereof in Latvia; 2) to identify the knowledge and opinions of residents aged 18 to 75 about startups in Latvia. As part of the present research, the authors conducted a survey in Latvia to identify the population's knowledge of startups, differences between startups and other kinds of enterprises as well as the role of startups in entrepreneurship. The research employed the monographic and descriptive methods, the descriptive statistics method and a sociological method – an Internet survey using quota sampling. The survey was conducted in January 2023 and involved 1005 respondents throughout Latvia. The survey found that most of the respondents (73%) generally knew or had heard about startups and, according to the respondents, the main features that distinguished startups from other kinds of enterprises were innovation (54%), use of modern technologies (48%) and fast growth (41%). 63% of the respondents who had heard about startups noted that the startups, compared with other kinds of enterprises, were generally important for further development of the business environment in Latvia.

**Key words:** startups, Latvia, ecosystem, entrepreneurship, company, development.

### Introduction

A startup is a new enterprise that has been operating for up to 10 years and whose business model supplies goods and/or services, solves customer problems, implements innovations and fosters overall growth (Vonoga & Zvaigzne, 2022). Latvia legislation defines a start-up company – a capital company with a high growth potential, the main activity of which is related to the development, production or development of scalable business models and innovative products (Likumi.lv, 2016). In Lithuania, the new legislation defines a start-up as a very small or small enterprise with a large and innovation-based business development potential, operating for less than 5 years (Startuplithuania, 2019). Start-up is a very small nascent enterprise that is expected to discover or create a new need, an attractive and unusual product, a scalable business model, and rapid significant growth. It creates new jobs, brings solutions to current problems in the economy, technology, ecology, communication, leisure, and entertainment. Start-up is a relatively new and attractive business form that has been explored in a broader economic and industry context (Windén *et al.*, 2020). Start-up is a young and very small enterprise whose staffing and human relationships are different from the internal environment of larger enterprises (Slavík *et al.*, 2020). Startups play an important role both in increasing competition and in fostering the growth of the national economy. The operation and development of startups provide high-paid jobs, as well as contributes to the inflow of innovative business ideas, the development of high value-added goods and services, the attraction of investments and a transition of the national economy to a modern and innovative economy (Ministry of

Economics, 2020; 2023). Startups are associated with the potential for development of a modern, high value-added economy. The Law on Aid for the Activities of Start-up Companies has been in force in Latvia since 2017, and one of the national startups – the global printing, sewing and delivery outsourcing giant Printful – managed to achieve the so-called unicorn status, as the value of the startup exceeded one billion USD (Barons, 2022).

Overall, the development of the field of startups in the period 2018–2021 could be characterized by a steady growth and fast increase in investments in the information and technology sector, as a large part of the economic, financial and legal activity moves to the global market outside Latvia, as well as by a relatively large number of startups that have uncertain global-scale potential for growth (Cross-Sectoral Coordination Centre, 2022).

Despite their uncertain business prospects, startups play an important role in fostering economic growth (Acs & Mueller, 2008; Acs & Audretsch, 2010) and providing new job opportunities (Henrekson & Johansson, 2010). Startups, including high-tech ones, are often expected to foster innovation (Lynskey, 2004; Kato & Zhou, 2018).

Startups have become one of the main factors in growth in the country, as the number of startups has increased significantly in recent years, while promoting regional development and innovation, accelerating institutional and structural changes, increasing productivity and launching new goods and services on the market. Today in view of the impact of the recent economic crisis, fostering and encouraging entrepreneurship is even more important (Ziakis *et al.*, 2022).

The research aims to theoretically examine the nature of startups and identify the opinions of residents on startups in Latvia. The following specific research tasks were set: 1) to conduct a theoretical review of literature on startups and the ecosystem thereof in Latvia; 2) to identify the knowledge and opinions of residents aged 18 to 75 about startups in Latvia. As part of the research, a survey was conducted in Latvia to identify the knowledge of residents aged 18–75 about startups, differences between startups and other kinds of enterprises as well as the role of startups in entrepreneurship.

The research employed the monographic and descriptive methods, the descriptive statistics method and a sociological method – an Internet survey using quota sampling.

#### *Startup ecosystem*

Latvia was ranked 42<sup>nd</sup> among 150 countries in the Global Startup Ecosystem Index 2021 designed by the international startup ecosystem map and research centre StartupBlink. The index indicates that the startup ecosystem in Latvia has the potential to become a technological centre with access to the European market and relatively low costs. In Latvia, the potential of startups is also supported by economic indicators, e.g. the number of startups that have attracted investments has grown from 42 in 2018 to 71 in 2021 (Ministry of Economics, 2020; 2023). A medium-term strategy for developing an ecosystem for startups is also included in the National Industrial Policy Guidelines for 2021–2027, which envisage creating a new economic pattern based on knowledge and innovation, focusing on both increasing the capacity for innovation and improving the quality of the institutional environment and increasing the dynamism of entrepreneurship (Ministry of Economics, 2020; 2023). The startup ecosystem is the driver of exports from Latvia. It is important for national enterprises to identify prospects for exports and consider their business broadly. It is no secret that national entrepreneurs often focus on the domestic market. In this respect, startups are the driver of exports, as the Latvian and Baltic markets are not capacious enough for the technologies and products they develop (Karika, 2022).

The ecosystem in Latvia is small but dynamic, and it is made up of highly motivated and talented multilingual individuals (often fluent in at least three or more languages) of different ages and experience. The startup environment is dynamic and growing fast. All the key stakeholders have joined their efforts to facilitate this growth. In Latvia, the startup infrastructure consists of more than four hundred registered startups, a group of institutional investors and business angels, a diverse range of modern office spaces for co-working, dozens of government incubators, the

academic community and private persons, as well as many interesting meetings, productive conferences and hackathons. Several annual Tech & Innovation conferences are held in Riga: iNovuss, Deep Tech Atelier, Riga Tech Girls, TechChill and others. In addition, a unique law on startups was adopted and a startup visa, which formally is a temporary residence permit, was designed in order to make the national startup ecosystem even more dynamic and productive (Investment and Development Agency of Latvia, 2020). Open data hackathons or digital innovation contests are events where individuals from different fields of activity cooperate to create platforms that will benefit society, thereby creating a win-win situation for all the participants. Hoping to promote digital services that could be a key element in the development of startups, government agencies coordinate such events. It is an excellent way of fostering business growth (Komssi *et al.*, 2014). In this way, software developers could extend their applications to startups, as they can cooperate effectively with the help of the organizers and have access to the necessary infrastructure to grow an enterprise, and hackathons could provide great experience for would-be entrepreneurs to cooperate with external partners in order to create new ideas (Zhao *et al.*, 2016).

In 2022, the European startup list included 97 most important startups. The technology sector is booming in Latvia. This year, the list of 97 best Latvian technology startups is an eclectic mix of hyper-growth scale enterprises, small creative startups and others (Seedtable, 2023). The capital Riga is undoubtedly the centre of startup activity, where events such as Tech Chill are held, while other cities, such as Jurmala and Daugavpils, are also involved. More than 400 startups are currently registered in the national ecosystem of startups, and in 2021 it was considered one of the most startup-friendly countries in the world (Allen, 2022).

Overall, the review of the available literature on startups in Latvia allows us to conclude that there is little or almost no scientific literature on the topic, and this makes the present research important for the overall development of startups.

#### **Materials and Methods**

The main research question aimed to identify the relevance of startups in Latvia. To find out the opinions of residents about startups in Latvia, the research employed a data collection method – a survey of participants of an Internet panel of the research centre SKDS. It is a database of respondents maintained by the research centre, the purpose of which is to give the panellists the opportunity to participate in various social and marketing studies via the Internet. The survey participants registered in the panel receive invitations to participate in surveys by electronic mail

(e-mail) along with a hyperlink to the beginning of a survey questionnaire, which is placed on the WEB survey server of the research centre. Surveys are distributed by means of Internet resources, as this is the fastest and most effective way of data collection. Group members reported that online surveys were easier to complete when they spent most of their working time online (Nixon *et al.*, 2022).

The survey was conducted as an interactive dialogue – after the respondent answered the question/ questions on the screen, s/he pressed the confirmation

button, and the data recorded on the screen were sent to the server. The respondent then received the next survey question or questions on the screen. In this way, the entire questionnaire was completed online (SKDS, 2023). The survey was conducted as part of the present research in January 2023. The residents of Latvia aged between 18 and 75 were surveyed using random sampling. The sample size achieved was 1005 respondents. A detailed socio-demographic profile of the respondents is presented in Table 1.

Table 1

**Socio-demographic profile of the respondents, n=1005**

Indicator		Number	%
TOTAL:		1005	100
GENDER	Man	486	48.4
	Woman	519	51.6
AGE	18–24 years	72	8.5
	25–34 years	162	17.7
	35–44 years	208	20
	45–54 years	204	19.1
	55–63 years	189	17.3
	64–75 years	170	17.4
FAMILY STATUS	Married or living with a partner	639	62.8
	Divorced or not living with the husband/wife	89	8.7
	Not married	216	22.5
	Widow/widower	61	5.9
LANGUAGE SPOKEN IN THE FAMILY	Latvian	618	61.7
	Russian	376	37.2
	Other	11	1.1
EDUCATION	Primary	45	4.6
	General or professional secondary	598	58.9
	Higher	362	36.5

Indicator	Number	%	
MAIN OCCUPATION	Senior or middle-level manager	77	7.3
	White-collar worker	334	33.3
	Blue-collar worker	228	22.3
	Business owner, sole proprietor	80	7.8
	Pensioner	155	15.6
	Schoolchild, student	36	4.2
	Housekeeper, on parental leave	46	4.7
	Unemployed	49	4.8
AVERAGE MONTHLY INCOME PER FAMILY MEMBER (QUINTILES)	Low (EUR 400 and less)	168	16.7
	Medium low (401-555 EUR)	143	14.3
	Medium (556-750 EUR)	154	15.2
	Medium high (EUR 751-1000)	133	13.2
	High (EUR 1001 and more)	121	12.2
	No opinion	286	28.6
CHILDREN AGED UNDER 18	Yes	330	33.1
	No	669	66.3
	No opinion	6	0.6
NUMBER OF INDIVIDUALS IN THE HOUSEHOLD	One	179	17.7
	Two	361	35.7
	Three	228	22.8
	Four and more	237	23.7
REGION	Riga	340	33.1
	Vidzeme	279	27.3
	Kurzeme	113	12.3
	Zemgale	135	13.7
	Latgale	138	13.6
TYPE OF RESIDENCE PLACE	Riga	340	33.1
	Another city or town	430	43.8

Source: authors' calculations based on the results of a survey of participants of a WEB panel of the research centre SKDS.

The demographic profile of the respondents indicated that 48.4% men and 51.6% women participated in the survey. Of the respondents, 33.1% indicated Riga as their place of residence, while 27.3% represented Vidzeme, 12.3% Kurzeme, 13.7% Zemgale and 13.6% Latgale. 61.7% of the respondents spoke Latvian in their families.

As shown in Table 1, 35.7% respondents' households consisted of 2 people, 23.7% had four people and more, 22% had three people and 17.7% were single-person households. At the same time, 66.3% respondents stated that they did not have children. This means that the respondents from several generations lived together.

In addition, the demographic profile of the respondents indicated that 58.9% respondents had general or professional secondary education, and 36.5% had higher education.

The survey was structured in four question blocks; the first identified the respondents by demographic characteristic, while the next three question blocks established the respondents' level of knowledge about startups, the role of startups, as well as differences between startups and other kinds of enterprises. All

the respondents (n=1005) had to answer the questions of the first block, and only those who indicated some knowledge about startups gave answers to the second and third question blocks (n=790).

As mentioned above, the target group for the survey was the entire population of Latvia, and the geographical coverage included whole Latvia. However, to make the data more representative, the data were weighted according to the following characteristics: a region, nationality, age and gender.

**Results and Discussion**

To identify the respondents' knowledge of startups, the first block of questions was as follows: 'When recently talking about companies in society, they often mention the so-called startups. How well do you know what such enterprises are and how they differ from other or 'normal' enterprises? The answer options were as follows: I am aware of the issue, but not in detail; I have only heard about it; I know it very well; no opinion; I have not heard about it'. The survey question base included all the respondents, n=1005.

The answers of the respondents in detail are presented in Table 2.

Table 2

**Respondents' knowledge about startups, n=1005**

Indicator		Distribution of respondent answers										Total	
		...very good awareness		...general awareness, but not in detail		Awareness of the existence of such enterprises, yet no knowledge about anything more regarding them		No awareness of such enterprises		No opinion		Number	%
		Number	%	Number	%	Number	%	Number	%	Number	%		
TOTAL RESPONDENTS		47	4.8	256	25.8	431	42.5	215	21.4	56	5.6	1005	100.0
Gender	Man	30	6.3	145	30.2	201	40.7	81	16.8	29	6.0	486	100.0
	Woman	17	3.3	111	21.6	230	44.3	134	25.7	27	5.1	519	100.0
Age	18–24 years	7	9.4	32	44.5	23	32.0	10	14.2			72	100.0
	25–34 years	14	8.7	64	39.2	54	33.1	23	14.6	7	4.4	162	100.0
	35–44 years	19	8.9	57	27.0	82	39.6	41	20.0	9	4.5	208	100.0
	45–54 years	3	1.5	51	24.5	94	46.2	44	21.8	12	6.0	204	100.0
	55–63 years	3	1.6	29	15.4	89	47.0	55	29.2	13	6.9	189	100.0
	64–75 years	1	0.6	23	13.3	89	52.2	42	25.1	15	8.9	170	100.0

		Distribution of respondent answers											Total
Education	Primary	2	4.5	8	19.1	13	27.0	16	36.2	6	13.2	45	100.0
	General or professional secondary	16	2.7	124	21.0	268	44.7	155	25.8	35	5.8	598	100.0
	Higher	29	8.1	124	34.3	150	41.0	44	12.4	15	4.2	362	100.0
Main occupation	Senior or middle-level manager	15	19.2	26	33.9	22	29.0	9	11.4	5	6.5	77	100.0
	White-collar worker	18	5.7	118	35.7	144	42.5	47	13.9	7	2.1	334	100.0
	Blue-collar worker	3	1.3	31	13.8	108	46.9	69	30.4	17	7.6	228	100.0
	Business owner, sole proprietor	3	3.8	24	29.9	35	43.8	14	17.5	4	5.1	80	100.0
	Pensioner	1	0.6	24	15.0	74	47.7	41	26.9	15	9.8	155	100.0
	Schoolchild, student	4	10.9	18	51.1	12	32.5	2	5.5			36	100.0
	Housekeeper, on parental leave	1	2.1	5	10.4	20	43.2	18	40.4	2	4.0	46	100.0
Unemployed	2	4.4	10	21.1	16	32.2	15	30.0	6	12.2	49	100.0	
Average monthly income per family member (quintiles)	Low	2	1.2	32	19.6	65	38.4	52	30.8	17	10.0	168	100.0
	Medium low	5	3.4	24	16.8	73	50.5	37	26.4	4	2.9	143	100.0
	Medium	4	2.6	35	22.9	77	49.7	30	19.5	8	5.3	154	100.0
	Medium high	7	5.5	44	33.5	61	45.9	18	12.8	3	2.2	133	100.0
	High	20	16.9	47	38.6	35	28.6	17	14.1	2	1.7	121	100.0
	No opinion	9	3.2	74	26.3	120	41.6	61	21.4	22	7.5	286	100.0
Number of individuals in the household	One	8	4.5	40	22.5	76	42.3	41	22.5	14	8.2	179	100.0
	Two	16	4.6	89	25.0	159	43.7	78	21.5	19	5.2	361	100.0
	Three	12	5.1	59	26.4	100	43.5	44	19.5	13	5.4	228	100.0
	Four and more	11	4.8	68	28.8	96	40.1	52	22.1	10	4.2	237	100.0
Region	Riga	27	8.2	111	33.5	139	40.2	47	13.5	16	4.6	340	100.0
	Vidzeme	13	4.7	78	28.3	116	41.1	55	19.8	17	6.1	279	100.0
	Kurzeme	2	2.0	15	13.1	52	46.1	36	31.6	8	7.2	113	100.0
	Zemgale	4	3.0	32	24.4	52	38.1	40	29.3	7	5.2	135	100.0
	Latgale	1	0.7	20	14.8	72	52.3	37	26.4	8	5.8	138	100.0

Source: authors' calculations based on the results of a survey of participants of a WEB panel of the research centre SKDS.

Most of the respondents (73%) generally knew or had heard about startups (5% knew about the issue very well, 26% were aware of the issue but not in detail, 42% had only heard about the existence of such enterprises). 21% of the respondents had not heard about startups, which was a significant proportion.

The survey found that mostly men and younger respondents had heard about startups. A trend could be observed that as the level of education and income increased, the proportion of respondents who had heard about startups increased as well. It could

also be observed that as the level of urbanization decreased, the proportion of respondents who had heard about startups decreased as well. It means that the residents in less populated areas did not receive information about startups.

The second block of questions was formulated as follows: 'What do you think are the features that make startups different from other or 'normal' enterprises?' The following answer options were given: ability to achieve the main goals of the enterprise, interest in solving customer problems, duration of the enterprise up to 7 years, fast

growth, use of modern technologies, innovations, no opinion, none of the above. The survey question base was the respondents who had heard about startups,  $n=790$ .

According to the respondents, the main feature that differentiated startups from other or “ordinary” enterprises was innovation (slightly more than half of the respondents or 54%) marked this option. The use of modern technologies (48%) and fast growth (41%) were also noted relatively often. The following features were noted relatively less often: duration of the enterprise up to 7 years (15%), interest in solving customer problems (10%) and ability to achieve the main goals of the enterprise (8%).

The third block of questions was formulated as follows: ‘How important, in your opinion, are startups for further development of the business environment in Latvia against the background of other kinds of enterprises?’

The survey showed that almost two-thirds or 63% of the respondents who had heard about startups noted that startups, compared with kinds of enterprises, were generally important for further development of the business environment in Latvia (very important – 19%, rather important – 44%). 9% of the respondents noted that startups were generally not important for further development of the business environment in Latvia against the background of other kinds of enterprises (not important at all – 2%, rather not important – 7%). It could be observed that younger respondents, the residents of Riga and Latvian-speaking respondents more often noted that startups were generally important for further development of the business environment in Latvia against the background of other kinds of enterprises. A trend could also be observed that as the level of education and income increased, the proportion of respondents who had noted that startups, compared with kinds of enterprises, were generally important for further development of the business environment in Latvia increased as well.

### Conclusions

1. A startup is a capital company with high growth potential, whose core economic activity relates to the implementation of a scalable business model and the design, development or production of innovative products. In academia, fast-growing enterprises or those with the potential for fast

### References

- Acs, Z.J., & Audretsch, D.B. (Eds.). (2010). *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*, 165–182. New York: Springer. Retrieved February 11, 2023, from <https://link.springer.com/book/10.1007/b105789>.

growth, including those having a scalable business model, are distinguished and emphasized. Besides, in the context of startups, the enterprises that are technology-based are also considered to be new enterprises. In the European Union, uniform criteria for defining a startup are still not adopted, and an understanding of the startup can differ significantly across various European countries.

2. The survey revealed that most of the respondents generally knew or had heard about startups, and it could be concluded that the respondents were informed about the issue and that startups were a current topic in society. 21% of the respondents had not heard about startups, which was a significant proportion. It follows that publicity needs to be increased through holding seminars and events, so that would-be entrepreneurs can establish an enterprise more easily, as well as get more information about support programmes and measures for starting a business.
3. According to the respondents, the main feature that distinguished startups from other kinds of or ‘ordinary’ enterprises was innovation, slightly more than half of the respondents or 54% noted this option. The use of modern technologies (48%) and fast growth (41%) were also noted relatively often. The answers provided by the respondents showed that the residents of Latvia were aware of the characteristics of a startup.
4. 63% of the respondents noted that startups, compared with other kinds of enterprises, were generally important for further development of the business environment in Latvia. A trend was also observed that as the level of education and income increased, the proportion of respondents who had given such an answer also increased, which indicated that the residents were aware of the essential role of startups in entrepreneurship development.

### Acknowledgements



IEGULDĪJUMS TAVĀ NĀKOTNĒ

The research was elaborated with financial assistance of EU ESF project No 8.2.2.0/20/I/005 ‘To Strengthen the Academic Staff of Rezekne Academy of Technology, Ventpils University of Applied Sciences and Vidzeme University of Applied Sciences in the Fields of Strategic Specialization’.

- Acs, Z.J., & Mueller, P. (2008). Employment effects of business dynamics: Mice, gazelles and elephants. *Small Business Economics*, 30, 85–100. DOI: 10.1007/s11187-007-9052-3.
- Allen, P. (2022). *10 awesome Latvian startups catching our attention in 2022*. EU-Startups. Retrieved February 12, 2023, from <https://www.eu-startups.com/2022/02/10-awesome-latvian-startups-catching-our-attention-in-2022/>.
- Barons, K. (2022). *How do startups in Latvia look against the Baltic background and how to promote their development?* Ir. Retrieved from <https://ir.lv/2022/11/21/ka-latvijas-jaunuznemumi-izskatas-uz-baltijas-fona-un-ka-veicinat-to-attistibu/>.
- Ministry of Economics. (2020; 2023). *Startups*. Retrieved January 12, 2023, from <https://www.em.gov.lv/lv/jaunuznemumi>.
- Global Startup Ecosystem Index (2021). The Global Startup Ecosystem Index Report. <https://lp.startupblink.com/report/>.
- Henrekson, M., & Johansson, D. (2010). Gazelles as job creators: a survey and interpretation of the evidence. *Small business economics*, 35, 227–244. DOI: 10.1007/s11187-009-9172-z.
- Investment and Development Agency of Latvia. (2020). *Start-up Ecosystem*. Retrieved January 12, 2023, from <https://www.liaa.gov.lv/en/invest-latvia/start-ecosystem>.
- Karika, A.E. (2022). *Investment and Development Agency of Latvia: Startup Ecosystem is the Driver of Exports from Latvia*. Labsoflatvia. Retrieved February 12, 2023, from <https://labsoflatvia.com/aktuali/liaa-jaunuznemumu-ekosistema-ir-latvijas-eksporta-virzitati>.
- Kato, M., & Zhou, H. (2018). Numerical labor flexibility and innovation outcomes of start-up firms: A panel data analysis. *Technovation*, 69, 15–27. DOI: 10.1016/j.technovation.2017.10.002.
- Komssi, M., Pichlis, D., Raatikainen, M., Kindström, K., & Järvinen, J. (2014). What are hackathons for? *IEEE Software*, 32(5), 60–67. DOI: 10.1109/MS.2014.78.
- Likumi.lv (2016). The Law on the Support of Start-up Enterprises. Retrieved February 11, 2023, from <https://likumi.lv/ta/id/287272-jaunuznemumu-darbibas-atbalsta-likums>.
- Lynskey, M.J. (2004). Determinants of innovative activity in Japanese technology-based start-up firms. *International Small Business Journal*, 22(2), 159–196. DOI: 10.1177/0266242604041312.
- Nixon, E., Silvonon, T., Barreaux, A., Kwiatkowska, R., Trickey, A., Thomas, A., ... & Denford, S. (2022). A mixed methods analysis of participation in a social contact survey. *Epidemics*, 41. DOI: 10.1016/j.epidem.2022.100635.
- Cross-Sectoral Coordination Centre. (2022). *Assessment of the Startup Ecosystem of Latvia and the Identification of the Present Situation*. Research and publication database. Retrieved January 12, 2023, from <http://petijumi.mk.gov.lv/node/4042>.
- SKDS (2023). Panel of Internet Survey Participants. *Research centre SKDS*. Private data, publicly not available.
- Seedtable. (2023). *97 Latvia Startups to watch in 2022*. Retrieved February 12, 2023, from <https://www.seedtable.com/startups-latvia>.
- Startuplithuania (2019). New Legislation Establishes a Concept of a Start-up. Retrieved February 11, 2023, from <https://www.startuplithuania.com/news/new-legislation-establishes-concept-start/>.
- Vonoga, A. & Zvaigzne, A. (2022). Theoretical Aspects of the Concept Start-up in the Literature. In *Proceedings of the 5th International Scientific Congress Society of Ambient Intelligence (ISC SAI 2022)*. Sustainable Development and Global Climate Change, 135–144. DOI: 10.5220/0011345400003350.
- Zhao, S., Sun, Y., & Xu, X. (2016). Research on open innovation performance: a review. *Information technology and management*, 17, 279–287. DOI: 10.1007/s10799-015-0231-7.
- Ziakis, C., Vlachopoulou, M., & Petridis, K. (2022). Start-up ecosystem (StUpEco): A conceptual framework and empirical research. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), 35. DOI: 10.3390/joitmc8010035
- Winden, W., Kör, B., Sierhuis, D., & Grijsbach, P. (2020). Tech Scale-Ups in the Amsterdam City Region; Hogeschool van Amsterdam: Amsterdam, The Netherlands, p. 5.
- Slavik, S., Srovnalíková, P., Navickas, V., & Girchenko, T. (2020). Human Dimension of Start-Up. *Financial and Credit Activity – Problems of Theory and Practice*. Vol. 3, Issue 34, pp. 392–401. Published 2020, Indexed 2020-11-27. Retrieved January 12, 2023, from <https://www.webofscience.com/wos/wosccc/full-record/WOS:000588420200039>.