

The entrepreneurial ecosystem in the Ukraine: Challenges and Opportunities when launching IT companies

A Master's Thesis submitted for the degree of
“Master of Business Administration”

supervised by
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Vienna, 28.06.2019

Affidavit

I, **ANASTASIYA PAROKHA**, hereby declare

1. that I am the sole author of the present Master's Thesis, "THE ENTREPRENEURIAL ECOSYSTEM IN THE UKRAINE: CHALLENGES AND OPPORTUNITIES WHEN LAUNCHING IT COMPANIES", 101 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted the topic of this Master's Thesis or parts of it in any form for assessment as an examination paper, either in Austria or abroad.

Vienna, 28.06.2019

Signature

Preface

During the course of this thesis I have not attempted to explore typical home or small businesses, but have focused instead on the startup ecosystem as a rather unique entity that has come into being in Ukraine about somewhat recently. In the following pages I have sought to provide readers with a unique, thorough look at the world of Ukrainian IT startups and the system in which they function. This information can be useful to new startup founders, state, investors, professionals and analysts.

The value of this thesis lies not so much in what the literature review of the startup IT ecosystem within Ukraine reveals, but in the research part. While there have been multiple publications in media and journals where investors and professionals share their views on the startup ecosystem, as well as interviews with startup founders sharing their success stories, to date, the startups have not been questioned regarding their opinions of the startup ecosystem and its various components. Together the literature review and the research part form the full and unique overview of the startup ecosystem as seen by all stakeholders, that allows fully see and assess its challenges, opportunities and provide recommendations for further growth. It also reveals the peculiarities of the system that might not be obvious at a glance to the international researchers and suggests steps to take to make Ukraine more competitive and strong on the world arena.

The uniqueness and importance of my research has been confirmed by active venture players, the representatives of Ukrainian Venture Capital and Private Equity Association (Ukrainian Venture Capital and Private Equity Association n.d.) and Open Innovation Platform RE:ACTOR (REACTOR UA LLC n.d.).

This master thesis is original and unpublished. The research was performed together with Open Innovation Platform RE:ACTOR. The ideas and survey questions that form the research are mine alone.

I would like to thank the Vienna University of Economics and Business (<https://www.wu.ac.at/en/>) and the Vienna University of Technology (<https://www.tuwien.at/en/>) for inspiring me to work on this topic and for allowing to choose topics of genuine interest and importance to myself.

Abstract

Ukraine is a country with a complicated past and a politically uncertain future. Despite having once been a part of the former USSR, Ukraine today is a largely pro-European country that in recent years has become internationally known for revolution, open conflict with Russia, and vast, systematic corruption.

However, there is a completely different side to the country that the majority of outsiders remain completely unaware of. Ukraine is becoming increasingly known in the IT sphere as one of the fastest growing IT outsourcing locations and the home for several close to Unicorn startups.

“Over 100 global telecom, eCommerce, software development, and gaming companies have R&D offices in Ukraine, including Grammarly, Magento, Ericsson, and Crytek. The country boasts the greatest percentage of software engineers in Central and Eastern Europe.” says the article by payment processor Payoneer Inc. (2018).

The main objectives of this master thesis are to define what shapes the entrepreneurial ecosystem of Ukraine, its development and what unique traits it has. Through this, I endeavor to explore and analyze the challenges and opportunities Ukrainian IT startups face when launching and developing businesses, as well as to provide recommendations that will have an impact on the further harmonious development of this ecosystem.

The whole analytical work done in this thesis is structured based on Isenberg’s entrepreneurial ecosystem framework (Isenberg 2011), which has:

- 1) Helped to build a proper logic structure for further recommendations
- 2) Defined all the stakeholders, the conditions of the ecosystem and their mutual impact
- 3) Led to the finding of missing, previously uncovered areas in literature, which, in turn, led to the formulation of a unique questionnaire for startup founders which allowed for unique research.

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1. Introduction

I would like to start with 'startup' definition and further explore why entrepreneurship, innovation and startups are so important for the nation and why it is so important to understand how the startup ecosystem functions.

In the modern entrepreneurial world the word "startup" has become some sort of obsession over the way to build a company, the way to do business, and the way to live one's life. If you type 'startup' in Google, you'll receive over 149 million results in the News section alone.

Here are some of the multiple attributes that surround the definition of a startup:

- Ability to invent and deliver ideas or products that do not exist yet, an innovation, a break-through idea or solution, a discovery (Quora 2015)
- Typically look for an investment to develop the idea in exchange for a company share
- Need a scalable business model to compete effectively (Katila. 2012)
- Face high uncertainty (Schmitt 2018)
- Mobility, speed, high use of technologies that allow for quick development/market launch
- Independent development and independent research separate from corporate sector
- As a social instrument, they are important for job creation (The Kauffman Foundation 2010)

While reading all the information and articles about startups online, people tend to think about them as hype and some new cool 'stuff', not fully understanding that they are now those, who will build the future. The Innovation Union (http://ec.europa.eu/research/innovation-union/index_en.cfm), a Europe 2020 (http://ec.europa.eu/europe2020/index_en.htm) flagship initiative, has perfectly predefined the reasons why startups are of most importance for a country - they make research and innovation for **securing global competitiveness** (European Commission n.d.). The growth and development of the local startups thus directly contributes to the country and nation's global competitiveness, its stability, standard of living, and position on the world stage.

That is why understanding how healthy the ecosystem is, is of crucial importance to the nation. Multiple indexes have been developed that measure innovation, competitiveness and entrepreneurship of the countries and before exploring Ukrainian startup ecosystem from inside,

I would like to start with these indexes to understand how Ukraine stands against other countries and whether these sources of data can provide insights for entrepreneurial ecosystem assessment.

The Global Innovation Index

“The Global Innovation Index (GII) aims to capture the multi-dimensional facets of innovation and provide the tools that can assist in tailoring policies **to promote long-term output growth, improved productivity, and job growth.**” (The Global Innovation Index 2018). GII is based on 5 input pillars that stand for the elements of the national economy that enable innovation activities: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication. There are also two output pillars whose aim is to capture actual evidence of innovation outputs: knowledge and technology outputs and creative outputs.

Figure 1. The pillars of GII



Source: The official website of Global Innovation Index, <https://www.globalinnovationindex.org/about-gii#framework>, accessed on 20th April, 2019

In the Global Innovation Index 2018 report (The Global Innovation Index 2018), Ukraine holds the **43rd position among the 126 economies** surveyed. It held the 50th position in 2017, so some growth has occurred over the 2018 year. Ukraine is more competitive than 65% of countries in the list.

Based on the GII framework and as seen on figure 2, **Ukraine's main strengths** are focused in:

- Human capital and research: education and R&D
- Infrastructure: ICT
- Business sophistication: knowledge workers
- Knowledge and technology outputs: knowledge creation and knowledge impact
- Creative outputs: intangible assets and online creativity

Ukraine's weaknesses, on the other hand, are:

- Institutions: political environment, regulatory environment, business environment
- Infrastructure: general infrastructure and ecological sustainability
- Market sophistication: credit, investment, trade, competition and market scale
- Business sophistication: innovation linkages, knowledge absorption
- Creative outputs: creative goods and services

Assessing Ukrainian strong and weak sides, we can conclude that this **innovative position should be credited to people, and not the state**. Let us further explore how this finding correlates with the other indexes.

Figure 2. Ukraine overview in the Global Innovation Index 2018 report

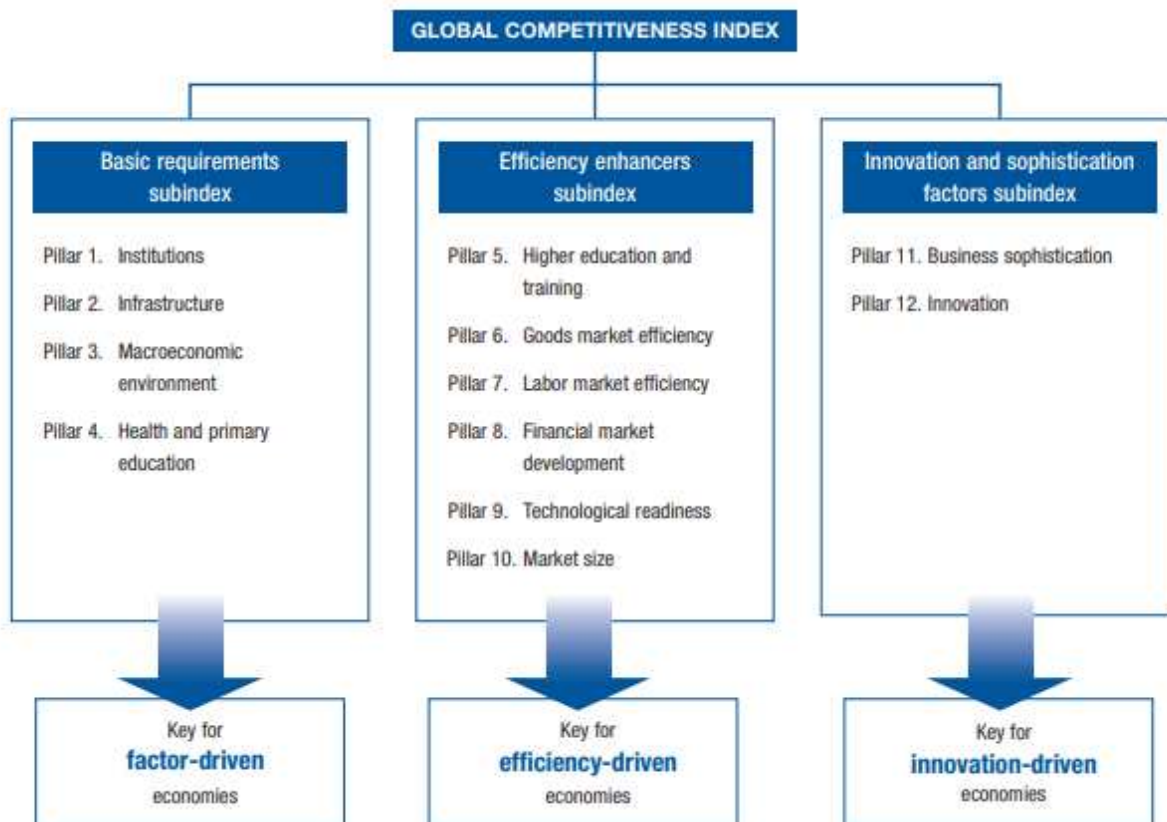
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science & engineering, %</td> <td>26.7</td> <td>21</td> <td>7.1</td> <td>Intangible assets</td> <td>58.6</td> <td>13</td> <td>7.1.1</td> <td>Trademarks by origin/bn PPP\$ GDP</td> <td>130.0</td> <td>5</td> </tr> <tr> <td>2.2.3</td> <td>Tertiary inbound mobility, %</td> <td>3.2</td> <td>61</td> <td>7.1.2</td> <td>Industrial designs by origin/bn PPP\$ GDP</td> <td>15.3</td> <td>7</td> <td>7.1.3</td> <td>ICTs & business model creation[†]</td> <td>49.6</td> <td>106</td> </tr> <tr> <td>2.3</td> <td>Research & development (R&D)</td> <td>12.8</td> <td>50</td> <td>7.1.4</td> <td>ICTs & organizational model creation[†]</td> <td>54.3</td> <td>57</td> <td>7.2</td> <td>Creative goods & services</td> <td>11.9</td> <td>86</td> </tr> <tr> <td>2.3.1</td> <td>Researchers, FTE/mn pop.</td> <td>1,037.2</td> <td>49</td> <td>7.2.1</td> <td>Cultural & creative services exports, % total trade</td> <td>0.1</td> <td>58</td> <td>7.2.2</td> <td>National feature films/mn pop. 15-69</td> <td>0.1</td> <td>101</td> </tr> <tr> <td>2.3.2</td> <td>Gross expenditure on R&D, % GDP</td> <td>0.5</td> <td>62</td> <td>7.2.3</td> <td>Entertainment & Media market/tn pop. 15-69</td> <td>n/a</td> <td>n/a</td> <td>7.2.4</td> <td>Printing & other media, % manufacturing</td> <td>0.9</td> <td>63</td> </tr> <tr> <td>2.3.3</td> <td>Global R&D companies, top 3, mn US\$</td> <td>0.0</td> <td>40</td> <td>7.2.5</td> <td>Creative goods exports, % total trade[Ⓔ]</td> <td>0.4</td> <td>61</td> <td>7.3</td> <td>Online creativity</td> <td>16.9</td> <td>43</td> </tr> <tr> <td>2.3.4</td> <td>QS university ranking, average score top 3*</td> <td>277</td> <td>43</td> <td>7.3.1</td> <td>Generic top-level domains (TLDs)/tn pop. 15-69</td> <td>4.2</td> <td>57</td> <td>7.3.2</td> <td>Country-code TLDs/tn pop. 15-69</td> <td>4.9</td> <td>50</td> </tr> <tr> <td colspan="4">Infrastructure</td> <td>38.1</td> <td>89</td> <td>7.3.3</td> <td>Wikipedia edits/mn pop. 15-69</td> <td>3.1</td> <td>38</td> <td>7.3.4</td> <td>Mobile app creation/bn PPP\$ GDP</td> <td>37.3</td> <td>19</td> </tr> <tr> <td>3.1</td> <td>Information & communication technologies (ICTs)</td> <td>57.7</td> <td>69</td> <td colspan="10">Market sophistication 42.7 89</td> </tr> <tr> <td>3.1.1</td> <td>ICT access*</td> <td>66.0</td> <td>64</td> <td>4.1</td> <td>Credit</td> <td>31.3</td> <td>84</td> <td>4.1.1</td> <td>Ease of getting credit*</td> <td>75.0</td> <td>26</td> </tr> <tr> <td>3.1.2</td> <td>ICT use*</td> <td>31.7</td> <td>95</td> <td>4.1.2</td> <td>Domestic credit to private sector, % GDP</td> <td>47.3</td> <td>73</td> <td>4.1.3</td> <td>Microfinance gross loans, % GDP[Ⓔ]</td> <td>0.0</td> <td>79</td> </tr> <tr> <td>3.1.3</td> <td>Government's online service*</td> <td>58.7</td> <td>70</td> <td>4.2</td> <td>Investment</td> <td>30.0</td> <td>115</td> <td>4.2.1</td> <td>Ease of protecting minority investors*</td> <td>55.0</td> <td>78</td> </tr> <tr> <td>3.1.4</td> <td>E-participation*</td> <td>74.6</td> <td>32</td> <td>4.2.2</td> <td>Market capitalization, % GDP[Ⓔ]</td> <td>22.2</td> <td>60</td> <td>4.2.3</td> <td>Venture capital deals/bn PPP\$ GDP</td> <td>0.0</td> <td>79</td> </tr> <tr> <td>3.2</td> <td>General infrastructure</td> <td>31.4</td> <td>89</td> <td>4.3</td> <td>Trade, competition, & market scale</td> <td>66.7</td> <td>45</td> <td>4.3.1</td> <td>Applied tariff rate, weighted mean, %</td> <td>2.5</td> <td>55</td> </tr> <tr> <td>3.2.1</td> <td>Electricity output, kWh/cap</td> <td>3,590.4</td> <td>54</td> <td>4.3.2</td> <td>Intensity of local competition[†]</td> <td>66.1</td> <td>74</td> <td>4.3.3</td> <td>Domestic market scale, bn PPP\$</td> <td>366.4</td> <td>47</td> </tr> <tr> <td>3.2.2</td> <td>Logistics performance*</td> <td>31.2</td> <td>79</td> <td colspan="10">NOTES: ● indicates a strength, ○ a weakness, ● an income group strength, ○ an income group weakness, * an indicator, † a survey question</td> </tr> <tr> <td>3.2.3</td> <td>Gross capital formation, % GDP</td> <td>21.0</td> <td>77</td> <td colspan="10">Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org.</td> </tr> <tr> <td>3.3</td> <td>Ecological sustainability</td> <td>25.1</td> <td>115</td> <td colspan="10">Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 215 of this appendix for details.</td> </tr> <tr> <td>3.3.1</td> <td>GDP/unit of energy use</td> <td>3.5</td> <td>113</td> <td colspan="10">† Country/Economy Profiles 336</td> </tr> <tr> <td>3.3.2</td> <td>Environmental performance*</td> <td>52.9</td> <td>88</td> <td colspan="10"></td> </tr> <tr> <td>3.3.3</td> <td>ISO 14001 environmental certificates/bn PPP\$ GDP</td> <td>1.3</td> <td>60</td> <td colspan="10"></td> </tr> </table>														Score/Value	Rank					Score/Value	Rank	Institutions				49.1	107	Business sophistication				34.5	46	1.1	Political environment	27.4	122	5.1	Knowledge workers	46.0	41	5.1.1	Knowledge-intensive employment, %	37.3	33	1.1.1	Political stability & safety*	20.9	123	5.1.2	Firms offering formal training, % firms	22.6	68	5.1.3	GERD performed by business, % GDP	0.3	46	1.1.2	Government effectiveness*	30.7	102	5.1.4	GERD financed by business, %	36.9	47	5.1.5	Females employed w/advanced degrees, %	29.8	3	1.2	Regulatory environment	60.2	78	5.2	Innovation linkages	29.0	63	5.2.1	University/industry research collaboration [†]	39.8	70	1.2.1	Regulatory quality*	33.1	97	5.2.2	State of cluster development [†]	35.5	98	5.2.3	GERD financed by abroad, %	22.1	19	1.2.2	Rule of law*	22.9	107	5.2.4	JV-strategic alliances deals/bn PPP\$ GDP	0.0	87	5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0.2	39	1.2.3	Cost of redundancy dismissal, salary weeks	13.0	43	5.3	Knowledge absorption	28.4	75	5.3.1	Intellectual property payments, % total trade	0.7	47	1.3	Business environment	59.6	100	5.3.2	High-tech net imports, % total trade [Ⓔ]	8.0	64	5.3.3	ICT services imports, % total trade	1.0	69	1.3.1	Ease of starting a business*	9.1	45	5.3.4	FDI net inflows, % GDP	2.6	68	5.3.5	Research talent, % in business enterprise	29.1	42	1.3.2	Ease of resolving insolvency*	28.2	118	Knowledge & technology outputs 36.7 27										Human capital & research				37.9	43	6.1	Knowledge creation	46.8	15	6.1.1	Patents by origin/bn PPP\$ GDP	6.3	19	2.1	Education	55.8	34	6.1.2	PCI patents by origin/bn PPP\$ GDP	0.4	38	6.1.3	Utility models by origin/bn PPP\$ GDP	26.8	1	2.1.1	Expenditure on education, % GDP	5.9	26	6.1.4	Scientific & technical articles/bn PPP\$ GDP	10.2	50	6.1.5	Citable documents H index	15.0	49	2.1.2	Government funding/pupil, secondary, % GDP/cap	25.9	21	6.2	Knowledge impact	42.0	40	6.2.1	Growth rate of PPP\$ GDP/worker, %	3.4	15	2.1.3	School life expectancy, years [Ⓔ]	15.0	51	6.2.2	New businesses/tn pop. 15-64	1.5	60	6.2.3	Computer software spending, % GDP	0.6	17	2.1.4	PISA scales in reading, maths & science	n/a	n/a	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3.9	71	6.2.5	High- & medium-high-tech manufacturers, %	0.2	50	2.1.5	Pupil/teacher ratio, secondary	7.0	3	6.3	Knowledge diffusion	21.3	53	6.3.1	Intellectual property receipts, % total trade	0.2	46	2.2	Tertiary education	45.2	26	6.3.2	High-tech net exports, % total trade [Ⓔ]	3.1	45	6.3.3	ICT services exports, % total trade	4.8	15	2.2.1	Tertiary enrolment, % gross [Ⓔ]	83.4	12	6.3.4	FDI net outflows, % GDP	0.2	92	Creative outputs 36.5 45				2.2.2	Graduates in science & engineering, %	26.7	21	7.1	Intangible assets	58.6	13	7.1.1	Trademarks by origin/bn PPP\$ GDP	130.0	5	2.2.3	Tertiary inbound mobility, %	3.2	61	7.1.2	Industrial designs by origin/bn PPP\$ GDP	15.3	7	7.1.3	ICTs & business model creation [†]	49.6	106	2.3	Research & development (R&D)	12.8	50	7.1.4	ICTs & organizational model creation [†]	54.3	57	7.2	Creative goods & services	11.9	86	2.3.1	Researchers, FTE/mn pop.	1,037.2	49	7.2.1	Cultural & creative services exports, % total trade	0.1	58	7.2.2	National feature films/mn pop. 15-69	0.1	101	2.3.2	Gross expenditure on R&D, % GDP	0.5	62	7.2.3	Entertainment & Media market/tn pop. 15-69	n/a	n/a	7.2.4	Printing & other media, % manufacturing	0.9	63	2.3.3	Global R&D companies, top 3, mn US\$	0.0	40	7.2.5	Creative goods exports, % total trade [Ⓔ]	0.4	61	7.3	Online creativity	16.9	43	2.3.4	QS university ranking, average score top 3*	277	43	7.3.1	Generic top-level domains (TLDs)/tn pop. 15-69	4.2	57	7.3.2	Country-code TLDs/tn pop. 15-69	4.9	50	Infrastructure				38.1	89	7.3.3	Wikipedia edits/mn pop. 15-69	3.1	38	7.3.4	Mobile app creation/bn PPP\$ GDP	37.3	19	3.1	Information & communication technologies (ICTs)	57.7	69	Market sophistication 42.7 89										3.1.1	ICT access*	66.0	64	4.1	Credit	31.3	84	4.1.1	Ease of getting credit*	75.0	26	3.1.2	ICT use*	31.7	95	4.1.2	Domestic credit to private sector, % GDP	47.3	73	4.1.3	Microfinance gross loans, % GDP [Ⓔ]	0.0	79	3.1.3	Government's online service*	58.7	70	4.2	Investment	30.0	115	4.2.1	Ease of protecting minority investors*	55.0	78	3.1.4	E-participation*	74.6	32	4.2.2	Market capitalization, % GDP [Ⓔ]	22.2	60	4.2.3	Venture capital deals/bn PPP\$ GDP	0.0	79	3.2	General infrastructure	31.4	89	4.3	Trade, competition, & market scale	66.7	45	4.3.1	Applied tariff rate, weighted mean, %	2.5	55	3.2.1	Electricity output, kWh/cap	3,590.4	54	4.3.2	Intensity of local competition [†]	66.1	74	4.3.3	Domestic market scale, bn PPP\$	366.4	47	3.2.2	Logistics performance*	31.2	79	NOTES: ● indicates a strength, ○ a weakness, ● an income group strength, ○ an income group weakness, * an indicator, † a survey question										3.2.3	Gross capital formation, % GDP	21.0	77	Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org .										3.3	Ecological sustainability	25.1	115	Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 215 of this appendix for details.										3.3.1	GDP/unit of energy use	3.5	113	† Country/Economy Profiles 336										3.3.2	Environmental performance*	52.9	88											3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.3	60										
				Score/Value	Rank					Score/Value	Rank																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Institutions				49.1	107	Business sophistication				34.5	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.1	Political environment	27.4	122	5.1	Knowledge workers	46.0	41	5.1.1	Knowledge-intensive employment, %	37.3	33																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.1.1	Political stability & safety*	20.9	123	5.1.2	Firms offering formal training, % firms	22.6	68	5.1.3	GERD performed by business, % GDP	0.3	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.1.2	Government effectiveness*	30.7	102	5.1.4	GERD financed by business, %	36.9	47	5.1.5	Females employed w/advanced degrees, %	29.8	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.2	Regulatory environment	60.2	78	5.2	Innovation linkages	29.0	63	5.2.1	University/industry research collaboration [†]	39.8	70																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.2.1	Regulatory quality*	33.1	97	5.2.2	State of cluster development [†]	35.5	98	5.2.3	GERD financed by abroad, %	22.1	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.2.2	Rule of law*	22.9	107	5.2.4	JV-strategic alliances deals/bn PPP\$ GDP	0.0	87	5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0.2	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	43	5.3	Knowledge absorption	28.4	75	5.3.1	Intellectual property payments, % total trade	0.7	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.3	Business environment	59.6	100	5.3.2	High-tech net imports, % total trade [Ⓔ]	8.0	64	5.3.3	ICT services imports, % total trade	1.0	69																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.3.1	Ease of starting a business*	9.1	45	5.3.4	FDI net inflows, % GDP	2.6	68	5.3.5	Research talent, % in business enterprise	29.1	42																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1.3.2	Ease of resolving insolvency*	28.2	118	Knowledge & technology outputs 36.7 27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Human capital & research				37.9	43	6.1	Knowledge creation	46.8	15	6.1.1	Patents by origin/bn PPP\$ GDP	6.3	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
2.1	Education	55.8	34	6.1.2	PCI patents by origin/bn PPP\$ GDP	0.4	38	6.1.3	Utility models by origin/bn PPP\$ GDP	26.8	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.1.1	Expenditure on education, % GDP	5.9	26	6.1.4	Scientific & technical articles/bn PPP\$ GDP	10.2	50	6.1.5	Citable documents H index	15.0	49																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.9	21	6.2	Knowledge impact	42.0	40	6.2.1	Growth rate of PPP\$ GDP/worker, %	3.4	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.1.3	School life expectancy, years [Ⓔ]	15.0	51	6.2.2	New businesses/tn pop. 15-64	1.5	60	6.2.3	Computer software spending, % GDP	0.6	17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.1.4	PISA scales in reading, maths & science	n/a	n/a	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3.9	71	6.2.5	High- & medium-high-tech manufacturers, %	0.2	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.1.5	Pupil/teacher ratio, secondary	7.0	3	6.3	Knowledge diffusion	21.3	53	6.3.1	Intellectual property receipts, % total trade	0.2	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.2	Tertiary education	45.2	26	6.3.2	High-tech net exports, % total trade [Ⓔ]	3.1	45	6.3.3	ICT services exports, % total trade	4.8	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.2.1	Tertiary enrolment, % gross [Ⓔ]	83.4	12	6.3.4	FDI net outflows, % GDP	0.2	92	Creative outputs 36.5 45																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
2.2.2	Graduates in science & engineering, %	26.7	21	7.1	Intangible assets	58.6	13	7.1.1	Trademarks by origin/bn PPP\$ GDP	130.0	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.2.3	Tertiary inbound mobility, %	3.2	61	7.1.2	Industrial designs by origin/bn PPP\$ GDP	15.3	7	7.1.3	ICTs & business model creation [†]	49.6	106																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.3	Research & development (R&D)	12.8	50	7.1.4	ICTs & organizational model creation [†]	54.3	57	7.2	Creative goods & services	11.9	86																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.3.1	Researchers, FTE/mn pop.	1,037.2	49	7.2.1	Cultural & creative services exports, % total trade	0.1	58	7.2.2	National feature films/mn pop. 15-69	0.1	101																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.3.2	Gross expenditure on R&D, % GDP	0.5	62	7.2.3	Entertainment & Media market/tn pop. 15-69	n/a	n/a	7.2.4	Printing & other media, % manufacturing	0.9	63																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.3.3	Global R&D companies, top 3, mn US\$	0.0	40	7.2.5	Creative goods exports, % total trade [Ⓔ]	0.4	61	7.3	Online creativity	16.9	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2.3.4	QS university ranking, average score top 3*	277	43	7.3.1	Generic top-level domains (TLDs)/tn pop. 15-69	4.2	57	7.3.2	Country-code TLDs/tn pop. 15-69	4.9	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Infrastructure				38.1	89	7.3.3	Wikipedia edits/mn pop. 15-69	3.1	38	7.3.4	Mobile app creation/bn PPP\$ GDP	37.3	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
3.1	Information & communication technologies (ICTs)	57.7	69	Market sophistication 42.7 89																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3.1.1	ICT access*	66.0	64	4.1	Credit	31.3	84	4.1.1	Ease of getting credit*	75.0	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.1.2	ICT use*	31.7	95	4.1.2	Domestic credit to private sector, % GDP	47.3	73	4.1.3	Microfinance gross loans, % GDP [Ⓔ]	0.0	79																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.1.3	Government's online service*	58.7	70	4.2	Investment	30.0	115	4.2.1	Ease of protecting minority investors*	55.0	78																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.1.4	E-participation*	74.6	32	4.2.2	Market capitalization, % GDP [Ⓔ]	22.2	60	4.2.3	Venture capital deals/bn PPP\$ GDP	0.0	79																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.2	General infrastructure	31.4	89	4.3	Trade, competition, & market scale	66.7	45	4.3.1	Applied tariff rate, weighted mean, %	2.5	55																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.2.1	Electricity output, kWh/cap	3,590.4	54	4.3.2	Intensity of local competition [†]	66.1	74	4.3.3	Domestic market scale, bn PPP\$	366.4	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.2.2	Logistics performance*	31.2	79	NOTES: ● indicates a strength, ○ a weakness, ● an income group strength, ○ an income group weakness, * an indicator, † a survey question																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3.2.3	Gross capital formation, % GDP	21.0	77	Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3.3	Ecological sustainability	25.1	115	Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 215 of this appendix for details.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3.3.1	GDP/unit of energy use	3.5	113	† Country/Economy Profiles 336																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
3.3.2	Environmental performance*	52.9	88																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.3	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

The Global Competitiveness Index

In the Global Competitiveness report put out by the World Economic Forum, (World Economic Forum 2018) on a scale from 1 to 7, 7 being the most, **Ukraine's national competitiveness score is 4.11**. Ukraine's position is 81st out of 137 countries, followed by underdeveloped South Asian, Latin-American, and Sub-Saharan African countries.

The country performance and the Global Competitiveness index are tracked over 12 pillars of competitiveness, that are the key for different types of economies as seen on Figure 3.

Figure 3. The Global Competitiveness Index framework

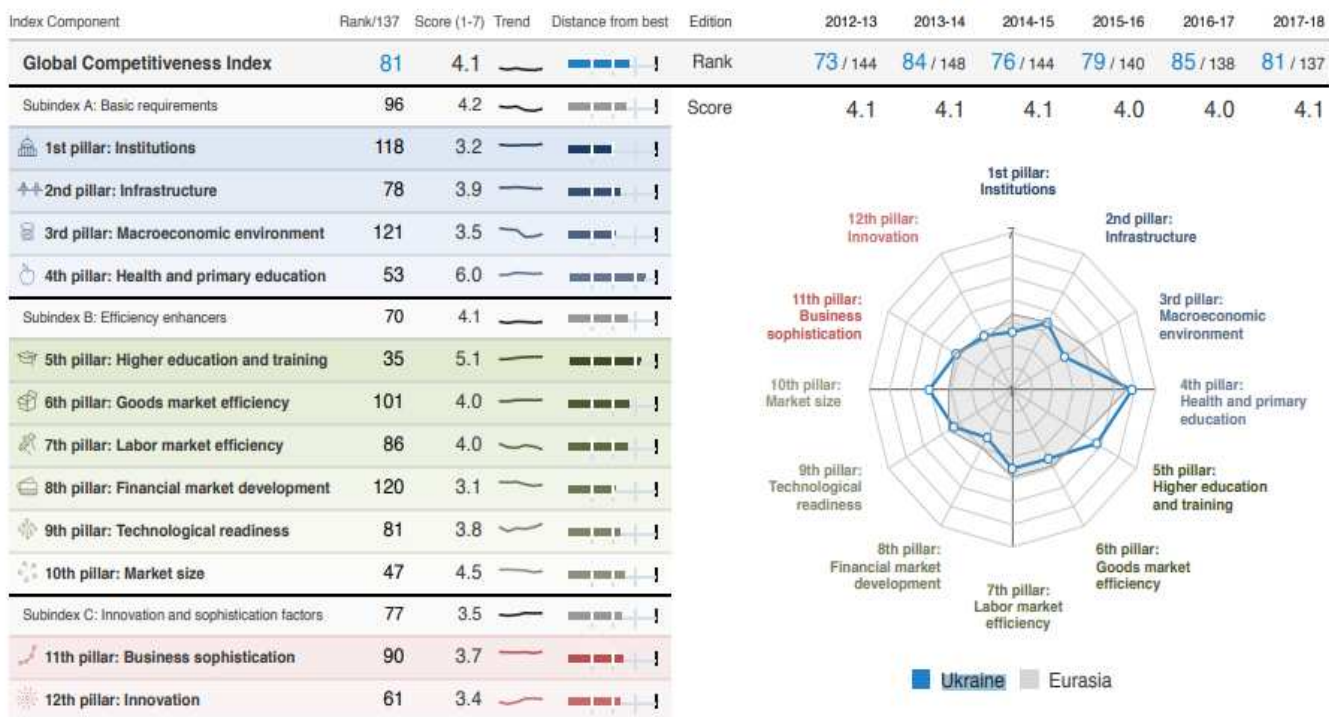


Source: The official website of World Economic Forum, <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>, accessed on 20th April, 2019

Let us further assess the Ukrainian performance over these 12 pillars.

Figure 4: Ukraine performance overview in the Global Competitiveness report

Performance overview

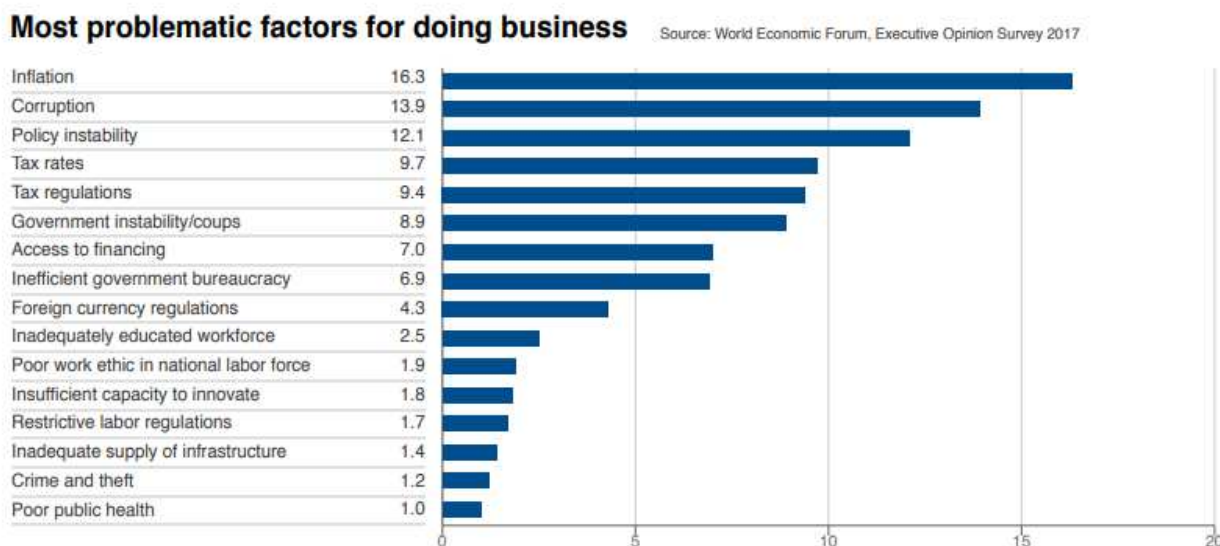


Source: The official website of World Economic Forum, <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>, accessed on 20th April, 2019

As we can see on Figure 4, Ukraine has the highest score for Health and primary education, Higher education and training, followed by market size, Labor market efficiency and Goods market efficiency. The lowest score is for Financial market development, Institutions, Innovation, Business Sophistication and Macroeconomic environment. Both factors that stand for innovation-driven economy have the lowest scores.

The most problematic factors for doing business in Ukraine as seen in the Global Competitiveness report are presented in Figure 5.

Figure 5. Most problematic factors for doing business in Ukraine in the Global Competitiveness report



Source: The official website of World Economic Forum, <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>, accessed on 20th April, 2019

There is definitely a correlation with the data we have seen in Global Innovation Index 2018 report: the most problematic factors directly relate to public institutions followed by lack of access to finances.

European Innovation Scoreboard (EIS)

According to the 2018 European Innovation Scoreboards (EIS), Ukraine is seen as a Modest Innovator. EIS uses 25 indicators to give a detailed analysis of the strengths and weaknesses of Member States on the basis of important innovation drivers – from research systems and public and private investment, to the economic effects of innovation (European Innovation Scoreboards (EIS) project 2018). **Ukraine’s European innovation score is 85** (the higher, the better). Relative strengths of the Ukrainian innovation system lie in employment impacts (employment in knowledge-intensive activities and knowledge-intensive services exports), human resources and firm investments, whereas the relative weaknesses are in linkages (innovative SMEs collaboration with each other), attractive research systems and innovators (SMEs product/process innovators) as seen on figure 6.

Figure 6. Ukraine overview in European Innovation Scoreboard 2018

Ukraine	Performance relative to EU 2010 in		Relative to EU 2017 in
	2010	2017	2017
SUMMARY INNOVATION INDEX	31.2	29.4	27.8
Human resources	65.8	131.6	110.3
New doctorate graduates	61.5	125.1	88.5
Population with tertiary education	N/A	N/A	N/A
Lifelong learning	N/A	N/A	N/A
Attractive research systems	18.4	22.3	19.6
International scientific co-publications	0.0	5.3	3.2
Most cited publications	18.5	21.6	20.8
Foreign doctorate students	24.5	29.2	26.4
Innovation-friendly environment	5.7	5.5	4.1
Broadband penetration	7.7	7.4	4.2
Opportunity-driven entrepreneurship	N/A	N/A	N/A
Finance and support	24.5	16.7	15.5
R&D expenditure in the public sector	41.1	14.1	14.6
Venture capital expenditures	3.2	20.0	16.4
Firm investments	70.7	44.8	40.1
R&D expenditure in the business sector	37.0	29.5	26.4
Non-R&D innovation expenditures	116.1	66.1	60.4
Enterprises providing ICT training	N/A	N/A	N/A
Innovators	18.2	16.0	18.6
SMEs product/process innovations	0.0	0.0	0.0
SMEs marketing/organisational innovations	2.4	0.0	0.0
SMEs innovating in-house	51.4	47.3	50.7
Linkages	12.5	9.6	9.5
Innovative SMEs collaborating with others	5.0	3.0	3.0
Public-private co-publications	19.1	15.4	15.5
Private co-funding of public R&D exp.	N/A	N/A	N/A
Intellectual assets	7.9	13.4	13.3
PCT patent applications	7.6	14.8	15.5
Trademark applications	18.5	18.1	16.0
Design applications	0.1	8.5	8.8
Employment impacts	69.2	77.9	77.5
Employment in knowledge-intensive activities	83.1	93.5	84.7
Employment fast-growing enterprises	N/A	N/A	N/A
Sales impacts	45.4	32.8	31.5
Medium and high tech product exports	59.6	28.3	26.7
Knowledge-intensive services exports	55.8	64.0	61.1
Sales of new-to-market/firm innovations	16.4	1.6	1.5

Dark green: normalised performance above 120% of EU; light green: normalised performance between 90% and 120% of EU; yellow: normalised performance between 50% and 90% of EU; orange: normalised performance below 50% of EU. Normalised performance uses the data after a possible imputation of missing data and transformation of the data

Data in red show a decline in performance compared to 2010.

Source: European Innovation Scoreboards (EIS) project 2018, European Innovation Scoreboard 2018, European Commission accessed on 10th May, <<https://ec.europa.eu/docsroom/documents/35916>>

While this report is not highlighting the influence on public institutions on innovation, what we can see is that there is no innovation-friendly environment. Very little innovation is happening in SMEs and they are not collaborating with each other. If innovating, companies prefer to keep the process in-house.

Global Entrepreneurship Index

In the 2018 Global Entrepreneurship Index, developed by The Global Entrepreneurship and Development Institute (Global Entrepreneurship Development Institute n.d.), **Ukraine is ranked 73rd among 137 countries with a GEI of 26.8** (the U.S. is ranked number one with a GEI of 83.6). What index explains in short is how entrepreneurial the nation is.

Data is collected using the GEDI methodology on the entrepreneurial attitudes, hopes, and skills of local individuals. This information is then weighted against that of the prevailing social and economic ecosystem, pausing to consider things like transport links to external markets and broadband connectivity. The GEDI uses 14 pillars to assess the health of the area's ecosystem, with 1 being the best possible grade. (Global Entrepreneurship Development Institute n.d.).

Ukraine has been measured as follows:

1. Opportunity Perception - 0.150
2. Startup Skills - 0.727
3. Risk Acceptance - 0.013
4. Networking - 0.339
5. Cultural Support - 0.179
6. Opportunity Startup - 0.235
7. Technology Absorption - 0.377
8. Human Capital - 0.457
9. Competition - 0.145
10. Product Innovation - 0.247
11. Process Innovation - 0.349
12. High Growth - 0.410
13. Internationalization - 0.355
14. Risk Capital - 0.540

Thus, the entrepreneurial strengths of Ukraine are startup skills, risk capital and human capital. The weak sides are risk acceptance, opportunity perception, competition, cultural support.

Global Startup Ecosystem Report

The 2019 Global Startup Ecosystem Report by Startup Genome (Startup Genome n.d.) has been analyzed and reviewed as well. This report features and explores 30 main startup “hubs” in the world, and Ukraine is not in the list. Thus, speaking about startup ecosystem, Ukraine is still much behind the world leaders.

National Entrepreneurship Context Index

The Global Entrepreneurship Monitor (GEM) is the world's foremost study of entrepreneurship. It is a trusted resource on entrepreneurship for key international organizations like the United Nations, World Economic Forum, World Bank, and the Organization for Economic Co-operation and Development (OECD), providing custom datasets, special reports, and expert opinion.” (Global Entrepreneurship Research Association n.d.).

In each economy, GEM looks at two elements: the entrepreneurial behavior and attitudes of individuals, and the national context and how that impacts entrepreneurship. To assess the environment for entrepreneurship in 54 economies, GEM used a National Entrepreneurship Context Index (NECI) and came up with the Global Report. As of today, and unfortunately for the course of this master thesis, Ukraine is not among the 54 economies featured and explored.

Startup Ecosystem Ranking Report 2019

The StartupBlink Rankings Report describes the results of the algorithm, which ranks startup ecosystems of more than 1,000 cities and 202 countries. The algorithm analyzes multiple data points from ecosystem stakeholders registered on StartupBlink website, the startups, accelerators, and coworking spaces, as well as data received from global partners such as Crunchbase and SimilarWeb (StartupBlink n.d).

According to the Startup Ecosystem Ranking Report 2019 by StartupBlink, the **Ukrainian startup ecosystem ranks as the 31st in the world** (+4 rank change from 2017), while Kyiv, the capital of Ukraine, is ranked 34 among thousands of other cities, rocketing into the top 50 from the number 63 spot it held in 2017. The Ukraine StartupBlink Startup Map has 386 startups, 20 accelerators, and 10 startup organizations.

Conclusions and questions risen from indexes overview

Summarizing the aforementioned data points from 5 international indexes/reports, Ukraine can be characterized as having:

- Strengths in human capital and research as well as knowledgeable, creative workers
- A weak political and business environment, low market sophistication, and undeveloped infrastructure
- The most problematic factors for conducting business are inflation, corruption, policy instability, a high tax rate, governmental instability, and a lack of access to finances
- A weak microeconomic environment
- A weak financial market development
- Low innovation index
- Low competitiveness index
- Low risk acceptance and cultural support
- **Surprisingly high startup skills**
- **Suddenly, Ukrainian startup ecosystem ranks as the 31st in the world**

While the above listed points provide a great overview of Ukrainian strengths and weaknesses and provide a great base for further research, they also lead to an interesting finding: The development of the strong startup ecosystem in a weak environment, with overall low competitiveness and innovation index and no public institutions. This, in its turn rises a new research question: how, in such a weak country, has such a strong startup ecosystem developed? What led to its development and on what pillars does it stand?

Partially, the answer to this question lies in the methodology used by StartupBlink to perform their analysis. While the innovation and competitiveness reports are based on the analysis of the country and its population and development as a whole, the StartupBlink report is focused directly on the startups, their quantity and quality, where they exist kind of independently from the country/national/people context and do not take into account other ecosystem components.

With this in mind, there comes a new question: how, in a country with weak political and business environment and weak financial market a large number of successful startups has developed? We will research this question in the course of this master thesis, since it is precisely the answer to the question what represents a unique feature of the Ukrainian startup ecosystem.

1.1 Problem formulation

There are 3 issues I would like to approach during the course of my research:

- 1) How healthy the Ukrainian startup ecosystem is?
- 2) What unique features does the Ukrainian startup ecosystem have?
- 3) How can the components that make up the Ukrainian startup ecosystem be strengthened to achieve further ecosystem growth and development?

I addressed the first problem with the intention of discovering what the recent state of the ecosystem components is, the challenges and opportunities within the ecosystem.

I addressed problem two with the intention of discovering the unique features that the Ukrainian startup ecosystem has.

I addressed problem three with the intention of discovering what actions have already been taken or are taken now to strengthen the weak components and what recommendations can be provided for further improvement and growth.

I believe that the results of my research will be beneficial for all startup ecosystem stakeholders by presenting an aggregated analysis of the current state of things. It is likely to also be helpful to potential startup founders as a guide of what to expect in this environment. Furthermore, my research is likely to reveal hidden problems in the ecosystem and provide food for thought for all stakeholders.

1.2 Objective of the thesis

When considering the three problems indicated above, I formulated specific objectives to use in the research process of the master thesis:

Objective 1: To identify and assess the recent state of the Ukrainian startup ecosystem components. Define strengths, weaknesses, and opportunities.

Objective 2: To identify, analyze, assess, and formulate the unique features that the Ukrainian startup ecosystem has.

Objective 3: Provide recommendations aimed at further growth and development of Ukrainian startup ecosystem.

Basing on this description of the problems and objectives, in the next subchapter I will present the specific actions I undertook to approach them.

1.3 Method overview

In order to develop a structured approach towards the startup ecosystem assessment, I started with a definition of the startup ecosystem and explored the existing frameworks and models that describe the ecosystem and provide a place for assessment.

I ended up choosing the Isenberg model (Isenberg 2011), which in my opinion best describes the stakeholders of the ecosystem as well as their main functions and roles within the ecosystem. With these ecosystem components I developed a structure for assessment and followed with an online literature review (sources used included Google search, Google scholar, Researchgate, Worldbank, as well as Ukrainian scientific journals). This online review included:

- Interviews with angel investors, representatives of both Ukrainian and international venture funds where they answered questions regarding the Ukrainian startup ecosystem
- Interviews where startup founders spoke about success and failures in their companies
- Ukrainian and international academic and non-academic research papers on the topic
- Researching state policy in regards to startups and entrepreneurial support
- Researching institutional programs and considering whether higher education can provide a base for raising future entrepreneurs
- Researching active venture funds and startup funding capabilities in Ukraine as a whole (
- Researching active startup accelerators and business hubs
- Researching the topic of corporate innovation
- Researching cultural domain
- Gathering other types of material related to the topic

While conducting literature research, I noticed that most of the documents available on the topic are either an assessment of the ecosystem by investors, professionals/advisors or a statement

of facts (state of things) in academic papers following some specific framework. I came to realize, that though startups are the biggest stakeholders of the ecosystem, nothing is known or has been researched on the topic of what startup founders think about the ecosystem and how they 'feel inside'. Since the topic of the thesis is formulated as "The entrepreneurial ecosystem in the Ukraine: Challenges and Opportunities when launching IT companies" and is directly related to startup founders, I came up with a questionnaire for startup founders about launching and running IT companies consisting of seven sections which formed the research part of the project:

- General information about the project
- Startup knowledge set and the first steps in the role of entrepreneur
- Markets
- Getting investments
- Ukrainian startup community
- Media and startups in Ukraine
- Your view of the startup ecosystem

The questionnaire was sent to startup owners and the data for analysis was received. The answers from the survey were used to supplement other findings gained from the literature review.

1.4 Structure of the thesis

You'll find that my thesis is made up of 5 chapters. My introduction introduces the problems I'll be looking to resolve, the various thesis' objectives, my method overview, and the way in which I plan to proceed. In Chapter 2, you'll find a general overview of the international and Ukrainian literature as it's related to the Ukrainian startup ecosystem and the elements that form it. In Chapter 3, I'll go into more detail on the methods used in empirical research and the particular approach I took when gathering empirical material. In Chapter 4, I give the results of the empirical study and the findings from my research. In Chapter 5, I combine the data from literature review and in empirical research to present recommendations for addressing the issues raised in the thesis and will conclude my thesis by recapping the results and making sure that the objectives I've set out to achieve in this master thesis have been met.

2. Literature review

2.1 Defining the entrepreneurial ecosystem

The term 'entrepreneurial ecosystem' consists of two components. In the classic sense, entrepreneurs are people who start businesses, hire labor, mobilize resources, and ensure that their operational business keeps running (Investopedia n.d.). The definition employed by the Organization for Economic Cooperation and Development (Organization for Economic Cooperation and Development 2014) reveals the other aspects of entrepreneurship - "Entrepreneurs are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploring new products, processes or markets".

Lately, as seen in media, social networks, news websites, blogs and business conferences, the term 'entrepreneur' has received a different meaning. Today it more relates to small businesses that do things differently, or startups. As Investopedia suggests, "An entrepreneur is an individual who creates a new business, bearing most of the risks and enjoying most of the rewards. The entrepreneur is commonly seen as an **innovator, a source of new ideas**, goods, services, and business/or procedures." (Investopedia n.d.).

According to Business Dictionary, "A startup is a young company that is just beginning to develop. Startups are usually small and initially financed and operated by a handful of founders or one individual. These companies offer a product or service that is not currently being offered elsewhere in the market, or that the founders believe is being offered in an inferior manner." (BusinessDictionary n.d.).

According to Paul Graham, "A startup is a company designed to grow fast. Being newly founded does not in itself make a company a startup. Nor is it necessary for a startup to work on technology, or take venture funding, or have some sort of "exit." The only essential thing is growth. Everything else we associate with startups follows from growth." (Paul Graham 2012).

Combining these definitions, startup in an entrepreneurial venture creating innovative products and growing fast.

The second component of 'entrepreneurial ecosystem' is ecosystem. 'Ecosystems' in the natural sciences are typically defined as a system of interconnected elements that interacted and formed with local organisms. I very much like the definition of the ecosystem by National Geographic: "An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life." (National Geographic Society n.d.). I can easily extrapolate this to 'work together to form a bubble of new business'.

Much like ecosystems in biology, an entrepreneurial ecosystem is composed of an assortment of various elements, including but not limited to individuals, organizations, and institutions, therefore we are talking about a system that is controlled by policies, societal and cultural norms, and the laws that regulate them.

2.2 The elements of an entrepreneurial ecosystem

Plenty of definitions exist for what an entrepreneurial/startup ecosystem is and the way in which it functions and we will look at a few popular and most advanced ones.

According to Wikipedia, "A startup ecosystem is formed by people, startups in their various stages and various types of organizations in a location (physical or virtual), interacting as a system to create and scale new startup companies. These organizations can be further divided into categories such as universities, funding organizations, support organizations (like incubators, accelerators, co-working spaces etc.), research organizations, service provider organizations (like legal, financial services, etc.) and large corporations. Local Governments and Government organizations such as Commerce / Industry / Trade departments also play an important role in startup ecosystem. Different organizations typically focus on specific parts of the ecosystem function and startups at their specific development stage(s)." (Wikipedia 2019).

According to Ben Spigel, "Entrepreneurial ecosystems are combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures" (Spigel 2015). Spigel has developed a number of attributes, that define the startup ecosystem and allow to assess presented in Table 1.

Table 1. Attributes of entrepreneurial ecosystem by Ben Spigel

Type of Attribute	Attribute	Description
Cultural	Supportive culture	Cultural attitudes which support and normalize entrepreneurial activities, risk taking, and innovation
	Histories of Entrepreneurship	Prominent local example of successful entrepreneurial ventures
Social	Worker talent	Presence of skilled workers who are willing to work at startups
	Investment Capital	Availability of investment capital from family and friends, angel investors, and venture capitalists
	Networks	Presence of social networks that connect entrepreneurs, advisors, investors and workers and that allow the free flow of knowledge and skills
	Mentors and role models	Local successful entrepreneurs and business people who provide advice for younger entrepreneurs
Material	Policy and governance	State-run programs or regulations that either support entrepreneurship through direct funding or remove barriers to new venture creation
	Universities	Universities and other higher education institutions which both train new entrepreneurs and produce new knowledge spillovers
	Support services	Firms and organizations that provide ancillary services to new ventures, for example, patent lawyers, incubators, or accountancies
	Physical infrastructure	Ability of sufficient office space, telecommunication facilities, and transportation infrastructure to enable venture creation and growth
	Open markets	Presence of sufficient local opportunities to enable venture creation and unimpeded access to global markets

Source: Spigel, Ben. 2015. The Relational Organization of Entrepreneurial Ecosystems. Entrepreneurship Theory and Practice, accessed on 1st April 2019

Daniel Isenberg's model (Isenberg 2011) of entrepreneurial ecosystem is one of the most commonly referenced and consists of six domains: policy, finance, markets, human capital, support, and culture. Isenberg views the entrepreneurial ecosystems as unique environments,, that have developed according to various idiosyncratic (peculiar) circumstances. "They are geographically bounded but not confined to a specific geographical scale" (OECD 2014). This

means, that environments can be limited to small geographical areas, such as cities, or to entire nations, as well as industries, which makes this framework a universal one.

For the purposes of this paper, the Isenberg entrepreneurship ecosystem framework will be used as a basis for the assessment of the Ukrainian ecosystem, such as providing an exhaustive overview of entrepreneurship ecosystem components. Table 2 presents and explains the main domains of the system through prism of which the further research of Ukrainian startup ecosystem will be conducted. Such a structure will help address the 1st objective of this thesis “To identify and assess the recent state of the Ukrainian startup ecosystem components. Define strengths, weaknesses, and opportunities” in a structured way as well as approach the second objective of this thesis “To identify, analyze, assess, and formulate the unique features that the Ukrainian startup ecosystem has”.

Table 2: Ecosystem components of Daniel Isenberg’s model

Domain	Characteristics of the domain
Policy	Government, Leadership (e.g. legislation, policies, institutions)
Finance	The financial capital that is made available to entrepreneurs (e.g. VC funds, angel investors, public capital markets)
Culture	What we read about and see. i.e. social norms, rags to riches stories, failing but eventually succeeding, etc.
Supports	Infrastructure, support professions, and Non-Government Institutions (e.g. incubators, tech-transfer experts, community events)
Human Capital	Education and work life (e.g. serial entrepreneurs, quality education, training directed at entrepreneurs)
Markets	Networks, first customers (e.g. reviews, engagement of first customers, global corporations)

Source: Personal elaboration of Isenberg, D., The entrepreneurship ecosystem strategy as a new paradigm for economic policy: principles for cultivating entrepreneurship, Babson Entrepreneurship ecosystem project, Babson College, Babson Park MA, 2011, accessed on 16th April 2019, <<http://www.innovationamerica.us/images/stories/2011/The-entrepreneurship-ecosystem-strategy-for-economic-growth-policy-20110620183915.pdf>>

In the course of this thesis each component of Isenberg entrepreneurship ecosystem framework will be researched and followed by aggregated SWOT analysis. External factors will not be considered in this thesis. The next subchapter starts with Policy, the first component of the startup ecosystem followed by 5 other components in separate subchapters.

2.2.1 Policy ecosystem component analysis

Ukraine has recently taken steps to make it easier to do business within the country. As a result, Ukraine has moved from 112 to 71 as a country in the “Ease of Doing Business” rating within a 5 year period (The World Bank Group n.d.). However, many obstacles to starting new businesses still remain, fundamental problems with corruption have yet to be addressed, and haphazard, overly legalistic laws are a serious hurdle to overcome.

According to the Third Annual Foreign Investor Survey run in September 2018 by UVCA (Ukrainian Venture Capital and Private Equity Association 2018), these are the highlights provided by 109 investors in regards to Ukraine:

Figure 7. Highlights from the Third Annual Foreign Investor Survey

Obstacles:

- “Widespread corruption” is the #1 obstacle to foreign investment for the third consecutive year, followed by “lack of trust in judiciary”. “Unstable financial system and currency” moved up to #3 from #5 last year.
- The top-3 obstacles are the same across portfolio and direct investors.
- “Military conflict with Russia” moved down to #5 in 2018 from #3 in 2016.

Timing:

- 28% think now is the optimal time to invest, 64% prefer to wait until after elections.

Positive factors:

- Fight against corruption and reset of judiciary would positively affect perceptions by both direct and portfolio investors.
- Direct investors also cited tangible progress in separating politics from business. Portfolio investors would appreciate a quick conclusion of a new IMF program after the elections.

Negative factors:

- Debt default, crackdown on independent institutions and rejection of democratic values would be the main detrimental factors.
- Direct investors view departure from democratic values and debt default as key negative factors. Portfolio investors would negatively react to a debt default and political influence on independent anti-corruption institutions or the NBU.

Source: Ukrainian Venture Capital and Private Equity Association 2018, Third Annual Foreign Investor Survey, accessed on 1st May 2019
<<https://inventure.com.ua/upload/library/Third%20Annual%20Foreign%20Investor%20Survey%20-%20Ukraine.pdf>>

The term “startup” is absent in Ukrainian legislation. The regulatory and legal basis of maintaining start-ups and investment activities in Ukraine is illustrated by the following laws: (Verkhovna Rada of Ukraine Laws of Ukraine n.d.)

- The Law of Ukraine “About investment activity” from 18.09.1991 y. №1560-XII

- The Law of Ukraine "About innovation activity" from 04.07.2002 y. №40-IV
- The Law of Ukraine "About Copyright and Related Rights" from 23.12.1993 y. №3792-XII
- The Law of Ukraine "About Protection of Rights to Trademarks for Goods and Services" dated 15.12.1993 y. №3689-XII
- The Law of Ukraine "About foreign investment" from 19.03.1996 y. №93 / 96-VR
- The Law of Ukraine "About Scientific Parks" from 25.06.2009 y. №1563-VI
- The Law of Ukraine "About Protection of Rights to Inventions and Utility Models" on 15.12.1993 y. №3687-XII
- The Law of Ukraine "About Personal Data Protection" from 01.06.2010 y. №2297-VI

Obviously, as shown by the dates listed, this legal base is rather outdated and requires a revamp.

The main concerns in the Policy component of the entrepreneurial ecosystem as seen by entrepreneurs, mentors, professionals, and investors are:

- High corruption, too much bureaucracy
- A lack of transparency within tax and customs institutions (The International Trade Administration 2019)
- Harassment by tax and customs officials
- A dysfunctional court system, unable to fairly adjudicate business disputes
- A struggling banking system
- Limited export financing resources
- High tax rates
- Opaque and costly regulatory environment
- Inadequate protection of intellectual property rights
- The lack of stimulation for SME activities
- Passive position of the state overall
- Poor social protection, lack of support - people do not feel secure getting a job in a startup because if it fails there is no social support or any sort of protection that will be offered.

There are some positives we can take away. A number of organizations have recently been started to leverage state support of startups, entrepreneurship, and innovation.

1. High-Tech Office Ukraine public organization was founded in 2016. This is a group of enterprises that operates in the technological field whose sole purpose is to create favorable conditions for the development of innovative businesses and the digital economy in Ukraine. (Hi Tech Office Ukraine n.d.)

On February 21, 2018, High-Tech Office Ukraine along with the State Innovative Financial-Credit Institution gathered a working group to discuss the implementation of the state startup ecosystem. The state is taking the first steps towards the creation of such an ecosystem in Ukraine, therefore the main theme of these discussions was to work out a mechanism by which the proposals on the state financing of start-ups could be made. All participants agree on one point: the importance of understanding the need to combine the efforts of the state, business, and the expert environment to create conditions to realize domestic potential in Ukraine.

2. In 2014, on the Association of IT and Digital companies of Ukraine, "Digital Ukraine" was founded. This Association is a nonprofit, non-governmental organization whose goal is to contribute to the formation of a social, economic, technological, and political environment in Ukraine that ensures the development of innovation and the industry of information, communication, and digital technologies as well as fosters the creation of new jobs and economic growth. (Digital Ukraine n.d.)

The work of the association is focused on the development of IT-business and the development of IT development strategy in the state bodies of Ukraine. In addition, the association carries out an educational function in which different programs and initiatives are envisaged. As of today, the association unites 12 IT-companies and one legal company. One of the activity directives of the association includes:

- Legislative initiatives
- Participation in the development of the IT Development Strategy by 2020
- Participation in the development of common standards (for compatibility)
- Participation in the development of a unified architecture
- Participation in the development of technical tasks for the construction of systems on a national scale

3. In December 2016, specialists from High-Tech Office Ukraine gathered with a group of experts from various world and national high-tech market leaders. Together with the assistance and support of the Ministry of Economic Development and Trade of Ukraine, the Committee of the Verkhovna Rada of Ukraine on Information and Communication, and the Administration of the President of Ukraine, they initiated and implemented a document entitled the "Digital Agenda of Ukraine 2020".

This is an extremely important document outlining the principles of Ukraine's development in the digital space and serves as the basis for the development of the digital economy. The vision is as follows: "Digital technology is the basis of Ukraine's well-being; the world where our new ones are created opportunities; The sphere defining the essence of transformation in the country - for a better life, work, creativity, education, rest, - Ukrainians and people of the world, adults and children." (Ukrainian Chamber of Commerce and Industry n.d.).

4. SFII - The State Finance Institution for Innovations is a new Government agency created and designed to facilitate foreign direct investment and strategic partnerships for the benefit of Ukraine and its partners around the world. Their mission is to provide financial instruments, full cycle administrative support, co-investment, asset management, as well as a full spectrum of project management and service to all its stakeholders.(The State Finance Institution for Innovations n.d).

5. On January 17, 2018, the Cabinet of Ministers of Ukraine approved the "Concept for the Development of the Digital Economy and Society of Ukraine for 2018-2020" and approved a plan of measures for its implementation (Ministry of Infrastructure of Ukraine 2018). In pursuance of the Action Plan an advisory board was created under the chairmanship of the First Vice Prime Minister of Ukraine. The following areas were added to the plan:

- Legislative and regulatory support
- Digital Infrastructure
- Public safety, "System 112"
- Financial technologies, non-cash payments
- Smart City
- Creative industry and IT service exports
- Research of IT and Telecom industries
- Digitalization of the social sphere

- Digital education
- Digital healthcare
- Internet of Things
- Industry 4.0
- Digital Farming
- Digitalization of science. National cloud of open science
- National system of paperless trade +EU4Digital Cross-border Cooperation
- Digitization of energy
- International investment cooperation
- Cloud computing
- Intellectual Property
- The defense industrial complex
- Cyber security
- Digitalization of building industries
- The market of electric vehicles in Ukraine
- Blockchain

6. In 2018, the Ministry of Economic Development initiated an experimental project on the organization of a state incentive fund for the creation and use of inventions (utility models) and industrial designs (The State Finance Institution for Innovations n.d.). The budget of the fund is 100 million UAH. The initiative was introduced in accordance with Government Resolution No. 500 of June 20, 2018. The State Finance Institution for Innovations was designated as the operator of the fund. Implementation of the project will contribute to improving the investment climate and the implementation of an effective mechanism for supporting and protecting intellectual property rights in Ukraine.

7. GARDA - the platform supporting innovations in the sphere of defense (UKROBORONPROM n.d.). One can apply on the website and be further supported by UKROBORONPROM, a state-owned group of companies that under the leadership of a single state body unites enterprises involved in the design, production, and sale of defense products both for the domestic and foreign markets.

8. Founded in 2004, the "IT Ukraine" association is the largest association of IT companies in Ukraine. "IT Ukraine" exists so that IT companies can work to develop information technology

together, gaining inspiration and sharing ideas (IT Ukraine Association n.d.). The association's primary vectors are as follows:

- Develop a regulatory framework to further grow the IT industry in Ukraine
- Further train and develop IT employees' knowledge and skills
- Promote software development and companies both at home and abroad
- Foster support for experience exchanges and take steps to develop the IT community

As of now, 58 IT companies throughout Ukraine belong to the "IT Ukraine" association. This encompasses over 30,000 developers in one country alone. "It Ukraine" is dramatically contributing to the further enhancement and development of the IT industry in Ukraine.

9. Agency of European Innovations stands behind the development of ICT, renewable energy, food, health, the creative industry, education, agricultural, and R&D areas throughout Ukraine, particularly within HORIZON2020, ENI, and other programs (Agency of European Innovations n.d.). The AEI supports SMEs, NGOs, R&D institutions, universities, as well as local and federal authorities. This is done to enable the implementation of common projects across the globe that are supported by the aforementioned programs.

10. The UVCA - Ukrainian Venture Capital and Private Equity Association) is an active player trying to improve the investment climate in Ukraine. UVCA lawyers develop bills and work with state bodies on their implementation. Three bills have been already been accepted by the state. A new bill considering LLCs is currently in progress (Ukrainian Venture Capital and Private Equity Association n.d.).

11. Although the state does not yet participate actively in the development of startups, it has begun to pay close attention to where the country ranks internationally for IT. Ukrainian ministers began to travel to international IT forums, such as CES and WEF, to join the private initiatives of the Ukrainian star-up community, and show their interest in the area.

Summing up the above, **we see the development of the startup ecosystem from the ground up**: Ukraine is the only country in the world where the IT sector was formed without state participation and this is the first unique feature of the Ukrainian startup ecosystem. Everything that was built, the venture capital industry, large IT-companies, business angels, are private initiatives (Bel Biz 2018).

2.2.2 Finance ecosystem component analysis

2018 has been a great year for startup investment in Ukraine. Investment volume reached a record \$323 million (SlideShare 2019 a), significantly higher than the \$265 million reached in 2017 (SlideShare 2018). The news were not all good, however. Stakeholders in the ecosystem appear to be not satisfied with the situation as it exists now, citing a lack of good deal flow, and entrepreneurs worry that capital availability is insufficient.

Ukrainian Venture Capital and Private Equity Association and Ukrainian business angel network UAngel (Uangel n.d.) are the most important players of the Ukrainian financing ecosystem. According to Ukrainian Venture Capital and Private Equity Overview 2018 (SlideShare 2019 b), 8 equity and 18 VC funds (UkraineInvest 2018) are active in Ukraine. 5 incubators are currently also active, each with investment capacities.

Exploring Ukrainian Venture Funds

In order to understand the investment strategy of Ukrainian venture funds I have come up with the table that allows to analyze in which domain startup venture capitalists are interested, on which stage of the startup lifecycle they are interested to invest and the average check amount they provide. The data is presented in Table 3.

Table 3. List of active venture capital funds in Ukraine

Name	Investment strategy	Investment geography	Investment stage	Average ticket	Companies in portfolio
408 Ventures	Cyber security, Enterprise software, IoT	USA, Ukraine, Israel	Seed	\$20-100K	23
Almaz Capital	Enterprise software, Cyber security, Machine intelligence, Deep learning, Blockchain, IoT, Data engineering/Management, Fintech	Eastern Europe	Early stage - Round A, B	\$500K-10M	23
Aventures	All areas focused on global markets	Eastern Europe, particularly Ukraine	Early stage - Round A, B	\$250K-1.5M	8

Chernovetskiy Investment Group	All areas focused on global markets	Global	Early stage - Round A, B	\$100K-1M	6
Concorde Capital	All areas focused on global markets	Ukraine, USA	Seed	\$100K-1M	1
Detonate Ventures	All areas focused on global markets	Global	Pre-seed		10
Digital Future	Digital marketing, Adtech, Hrtech, AI, Security	Global	Seed Early stage - Round A, B	\$40K	20
Empire State Capital Partners (ES Ventures)	All areas focused on global markets	Ukraine, Israel	Seed	\$500K	
Fison	Ukrainian companies focused on Asian market	Ukraine, USA, China	Seed	\$50-200K	
Imperious Group VC	SaaS, Mobile products, Adtech, Edtech, Analytics	USA, EU, Ukraine, Asia	Seed	\$50-300K	40
Integrum Ventures	Oil & Gas, Polymeric materials procession, Finance, Insurance, IT	Ukraine, CIS	Pre-seed	\$50K	8
Intel Capital	Machine learning, AI, IoT, Autonomous driving, Big Data, AR/VR, Robotics, Sports technologies	USA, China, Europe, Israel	Early stage - Round A, B	\$100k-100M	12 in region
Noosphere Venture Partners	Space and Satellite, Social networking, Advertising and Marketing, Big Data and Analytics, Fintech, Social and mobile gaming	Global	USA, China, Europe, Israel		4
SMRK	Soft for Mobile OS, Soft for Mac OS, Casual/business soft, B2C services, B2B services	Ukraine aimed at global markets	Seed	\$100K-1M	7
SYWORKS	Fintech	Ukraine aimed at global markets	Pre-seed	avg. \$50K	2

TA Ventures	Fintech, Digital, Health, Big Data, SaaS, Online marketplaces, Across sectors	Global	Seed Early stage - Round A, B	\$100- 500K	100
TMT Investments	Big Data, SaaS, Ecommerce	USA, Israel, Estonia	Seed Pre-A and A	\$250K- 5M	41
USP Capital LTD		Global	Pre-seed	\$50- 250K	12
WannaBiz	Adtech, SaaS	USA, UK	Seed	\$50K	7
HP Tech Ventures	3D printing, Commercial IoT, Immersive computing, AI, Edtech, Office of the future	USA/Canada, Israel, Europe, Asia	Early stage - Round A, B	\$1-5M	

Source: Personal elaboration of UVCA Investors Book report available at <https://ukraineinvest.com/wp-content/uploads/2018/06/investorsbook2017whoiswho-170404071347.pdf>

Analysis of venture funds strategies provides the following powerful insights:

- The number of venture funds is low
- Venture funds are interested to invest in hype IT domains mainly
- 25% of venture funds are keen to invest in any domain as long as the project targets the global market
- Only 25% of Ukrainian venture funds have mentioned Ukraine in investment geography, the top markets listed for investments are USA, Israel, Europe
- Only 4 venture funds can offer pre-seed investments, the average investment amount is \$50K
- 50% of venture funds can offer seed investments, investment amounts offered from \$50K to \$500K. Others are ready to invest in early stage mainly.
- Only 9 venture funds have more than 10 projects in their portfolio

These insights can now be transformed into unique traits of the Ukrainian IT startup ecosystem:

- Local investors show no interest investing in local projects
- There's no place for products that are not hype
- Startups are expected to target globally
- Local investors are not ready to take risks and invest in pre-seed stages

Exploring Ukrainian private equity funds

Apart from the venture funds financing, there are a few private equity funds that have been analyzed in Table 4.

Table 4. List of active private equity funds in Ukraine

Name	Investment strategy	Investment geography	Investment stage	Average ticket	Companies in portfolio
Aval - Brok LTD		Ukraine, Middle East, Europe	Early stage - Round A, B	\$200K-5M	14
Dragon Capital	Prominent business in production and service sector, Commercial real-estate	Ukraine	Growth	\$5-30M	5
Horizon Capital		Ukraine	Growth	\$5M-20M	3
iTech Capital	Adtech, Ecommerce, Ebanking, TMT, Software, IT Outsourcing	Central and Eastern Europe	Growth	\$2-10M	10
Ramsis Capital	Engineering, Digital, High Technology, Robotics	Ukraine, Middle East, Asia	Growth, Turnaround	\$250K-5M	19
Siguler, Guff & Co		Global	Pre-growth (mature)	\$10-80M	5 in region
4i Capital Partners		Ukraine, Belarus, Moldova	Growth		5

Source: Personal elaboration of UVCA Investors Book report available at <https://ukraineinvest.com/wp-content/uploads/2018/06/investorsbook2017whoiswho-170404071347.pdf>

As seen from the data above, private equity funds are interested in projects on a growth stage in various domains but only a few startups would ever made it to this list.

Exploring other sources of funding

Some of the well-known Ukrainian corporations have also been actively participating in startup funding as of late, which is a new trend for Ukraine as seen on figure 8.

Figure 7. Corporations investing in startups in Ukraine in 2018



Source: Ukrainian Venture Capital and Private Equity Overview 2018, accessed 1 May 2019, <<https://www.slideshare.net/UVCA/ukrainian-venture-capital-and-private-equity-overview-2018-141626280>>

Crowdfunding platforms and grant programs are also seen to be an attractive source of funding for Ukrainian startups.

Figure 8. Crowdfunding platforms and grant programs deals in Ukraine in 2018



Source: Ukrainian Venture Capital and Private Equity Overview 2018, accessed 1 May 2019, <<https://www.slideshare.net/UVCA/ukrainian-venture-capital-and-private-equity-overview-2018-141626280>>

Even more opportunities to access capital have been made available through the Horizon 2020 program. This funding mechanism is, however, very competitive and awareness among the startup and SME communities is very low. This, in turn, results in very low participation.

Foreign capital vs local capital

Over the years, foreign investors have shown great interest in financing the highest growing Ukrainian startups. However, these Ukrainian startups have global targeting and clientele (mainly the U.S.) and Ukrainian in this case speaks only about the country of startup origin.

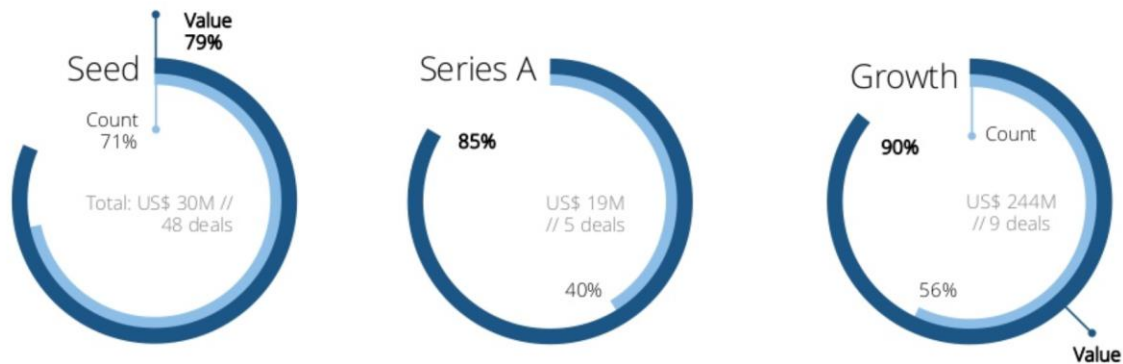
The **foreign capital prevalence is overwhelming** as seen on Figure 10 and this another unique trait of Ukrainian startup IT ecosystem.

Figure 9. Foreign capital prevalence in venture deals in Ukraine in 2018

Foreign capital prevalence

Share of foreign capital in the disclosed deals

The majority of both early-stage and late-stage financing came from foreign investors



Top-20 deals

The largest deals were financed by foreign capital

91% of capital for the 20 largest deals was provided by foreign investors. Deal targets - international businesses, co-founded in Ukraine, leveraging R&D in the country

8

Source: AVentures DealBook 2019, accessed on 10th May, https://www.slideshare.net/YevgenSysoyev?utm_campaign=profiletracking&utm_medium=sssite&utm_source=ssslideview

The main concerns in the Finance component of the entrepreneurial ecosystem as seen by entrepreneurs, mentors, professionals and investors are:

- Weak investment system overall: expertise, means, network
- The equity is usually very expensive
- No local crowdfunding availability

- Growth and later-stage capital are absent in the national market (though private equity funds offer finances for companies currently in the growth stage, these exist for well established national businesses that work mostly offline.)
- The small functioning financial market for public offerings and secondary deals
- Limited expertise in running public-driven funding for entrepreneurship
- Low number of VC funds offering pre-seed or seed investments. Investors want to invest in traction, on the other hand there aren't any startups yet in traction stage. Since there aren't any pre-seed investments, the companies can't reach the traction stage as there's no money for initial development.
- Investors are not interested in startups for Ukrainian markets, but in startups that are intending to go global (the small Ukrainian market doesn't allow for the kind of significant growth that investors would like to see)
- Foreign capital prevalence that deprives local funds of investment and potential earnings
- The recent presidential election did little to improve the investment climate in Ukraine, particularly in terms of attracting international investors to the country, many of whom know the new president to be a "comic" figure.
- War in the eastern region of Ukraine and the overall uncertainty this brings.

2.2.3 Culture ecosystem component analysis

The classic non-innovative micro-entrepreneurship has been widespread in Ukraine since the 1990's. SMEs provide work for more than 4 million people in Ukraine, generate about 20% of the country's GDP and make up the majority of the country's companies (EU4Business n.d.).

As of February 1st, 2019, there are 1,778 thousand individual entrepreneurs registered in Ukraine (RBK-Ukraine 2019). With an overall population of 42 million (MinFin 2019), the private entrepreneurs make 4.23% of the population. For comparison, according to the U.S. Bureau of Labour Statistics (U.S. Bureau of Labor Statistics n.d.), more than 25 million Americans were starting or running new businesses in 2015, with an overall population of 321 million in 2015 this makes 7.79%.

Still, the majority of Ukrainian freelancers are registered as private entrepreneurs. Additionally, working as a private entrepreneur is seen as a wide-spread alternative to employment as the amount of taxes accrued on the income of a private entrepreneur is much lower than the amount of taxes accrued on salaries of employees, especially in the IT (Contact Ukraine Pte Ltd

n.d.). According to the IT Ukraine Association, in 2018 there were 127,000 programmers in Ukraine. Of these, about 90% are registered as private entrepreneurs (Mind 2019). This being said, it is complicated to judge how entrepreneurial the nation really is.

In recent years, startups have become popular and respected among socially active locals, predominantly millennials. At the same time, Ukraine has suffered the negative impact of Soviet ideology which condemned capitalism and entrepreneurship, making that segment of the population over 40 resistant to entrepreneurship.

As a result of dispossession from 1930-1954, no middle class existed in Ukraine for decades (Wikipedia n.d. a), resulting in a highly insolvent population. **The absence of middle class is another unique trait of Ukrainian startup ecosystem.**

Gulag repressions (Wikipedia n.d. b) and the resulting desire of several generations not to “stand out” did little to help matters. We should also not fail to recall the 90s and the attitude they brought with them where “laws were meaningless, might made right, and wealth walked hand in hand with death.” (Russia Beyond 2018). This attitude still exists to some extent today and leads individuals to tend to hide their businesses.

In Ukraine, there is a big difference between a startup owner and an entrepreneur. Making no money and being rather small, startups can rarely be of interest to oppressive law enforcement agencies and raider attacks while entrepreneurs can be and often are. For example, in 2018 the Security Service of Ukraine and the State Fiscal Service conducted searches in more than 20 well-known companies (according to Google and Ukrainian media), most of which are in IT. Unfortunately, **raider attack are also unique for Ukrainian ecosystem.**

Nevertheless, a younger startup generation is on its way. Born after 1995, this generation was raised globally, with full access to technology and the ability to live free from the fears that haunted previous generations. Open-minded, technically-savvy, and knowing no social boundaries, these are the new, upcoming generation of stakeholders of the Ukrainian startup ecosystem, and they promise to be completely different.

The proximity to Europe and the policy of European integration contributes to the exchange of experience. Ukrainian company startups, as a rule, are represented at almost all major start-up events in Europe and the USA.

One specific strength of local startups in Ukraine and their unique feature is their global mindset. There are several reasons for this:

- Small domestic market
- The low grade of technology usage in the country
- Culture where most people are not ready for changes. “Ukrainian businesses ... must adapt to a more competitive environment. The commercial expertise, international networks and access to finance needed for this are in very limited supply. “(Chatham House 2017)
- Domestic investors show interest only in those startups that target globally
- Being global opens the possibility of receiving foreign investments and expertise
- The great success stories of companies such as Grammarly, Petcube, People.ai, BitFury, and YayPay have proven worldwide success to be possible.

Main concerns in Culture component of entrepreneurial ecosystem, as seen by entrepreneurs, mentors, professionals and investors are:

- Low possibility to save/earn enough money for initial start-up capital. The registered average wage in Ukraine in April 2019 was 10,269 UAH/month (Trading Economics n.d.) that roughly equal to \$370
- Low awareness of innovative entrepreneurship as a career choice and of its benefits and challenges among the general population
- Raw materials economy vs innovative economy
- No focus on growing a global company but rather developing a technology for sale
- Deep-tech is simply not a field that appears attractive for the majority of startups, which tend to desire consumer models and software that is more basic
- The number of successful serial entrepreneurs who remain active in Ukraine is very low
- Low-risk acceptance and low cultural support for entrepreneurship. These are profoundly influenced by the mentality of the most economically active generations which formed undercommunist influence, leading, as a result, to hostility towards innovation and entrepreneurship
- Though Ukraine has a few direct and indirect startup success stories, their number is insufficient to inspire local talent
- Though the number of news websites publishing information about Ukrainian startups is growing, the local startup ecosystem lacks the support of popular and professional media outlets.

2.2.4 Support Infrastructure ecosystem component assessment

Recently, numerous support infrastructures have emerged for entrepreneurs, but they have yet to play a significant role in the innovation ecosystem. The Ukrainian startup support infrastructure includes incubators, platforms, and accelerators that were created with the help of private investors, foreign grant programs, and organizations.

Accelerators & Hubs

1. GrowthUp Accelerator and Venture Fund (GrowthUp Business Accelerator n.d) focuses on helping startups in their early stages to create a product desirable to the western market. The GrowthUP business-accelerator is a part of the GrowthUP Group (GrowthUP Group n.d.) and is considered to be the first accelerator in Ukraine focused on technology-based projects. They provide complex support and advisory services for startups, access to investments, and support in expansion for European and US markets. They have a good set of mentors in a variety of fields and a very supportive and proactive team.
2. iHUB (Seed Forum Eastern Europe Foundation n.d.) is a project supported by Norway's Ministry of Foreign Affairs and operated by Seed Forum not-for-profit organizations. Their offices are located in Ukraine, Georgia, and Moldova. iHub equips startups with the necessary skills, education, mentorship support, and aids to assist in getting investments, partners, and high-quality infrastructure. As a result, teams are able to focus exclusively on creating their own businesses.
3. AgroHub (Agrohub n.d.) is a platform that works to develop agricultural innovations. AgroHub's goal is to strengthen the efficiency of the Ukrainian agricultural sector by putting new technologies into place and allowing skilled individuals to reach their potential. Agrohub launched a series of meetings entitled "Find your Agritech" that allows market players to meet with startups from other countries. In 2017 and 2018 Agrohub, along with Radar Tech and MHP, organized the first accelerator of agricultural innovations in Ukraine.
4. FeelGoodLabs (FeelGoodLabs Business Accelerator n.d.) is a new online business accelerator that features a strong teaching and mentoring team. FeelGoodLabs currently has a program devoted to social and municipal projects.

5. Sector X acceleration platform (Sector X Acceleration Platform n.d.) has a mission to help Ukrainian and Eastern European startups build global companies with sales in Western markets while keeping development centers in Ukraine. As part of the program, participants can visit the U.S. and the E.U.
6. YEP!Starter (Yep Srarter n.d.) is a Ukrainian entrepreneurship program. It's supported by Estonia's Ministry of Foreign Affairs, the Joint Project of Yep, the Beetroot Academy, and Garage 48. YEP is a network of academic business-incubators that provides an education in business for young people. This, in turn, contributes to the development of the entrepreneurial ecosystem of Ukraine.

Corporate accelerators

1. Radar Tech (Radar Tech n.d.) is the first Ukrainian corporate accelerator. It boosts corporate innovations, bridging the gap between leading corporates and promising startups. Presently, there are Telecom Accelerator, Agro Accelerator, Fintech accelerator, and Energy Accelerator.
2. DTEK Innovation Park (DTEK n.d.) is built on a basis of DTEK, the largest energy holding of Ukraine. They are looking for startup projects in multiple areas, from AI, drones, and e-mobility, up to energy efficiency and storage.
3. RE:ACTOR (REACTOR UA LLC n.d.) is an open innovation platform where the corporate sector meets innovative startups. Corporations describe their challenges and Reactor gathers ideas and delivers them in the form of short video presentations from the independent technology teams and employees of the company. On the website, an innovation committee then conducts an open vote, choosing the best solutions. The result of the majority of votes guarantees the author who originated the idea a contract for prototyping and testing ideas in the company.
4. The Sector 42 Innovation agency (Center42 Innovation Agency n.d.) wants to be an integral partner for corporate innovation and business ecosystem development projects both in Ukraine and the CEE. Sector 42's expertise ranges from startups, tp innovations, to entrepreneurship. Sector 42 organizes startup programs, is active in technology

scouting, and launches educational programs and workshops, They also take part in other projects related to technology, innovation, startups, and other creative industries.

Incubators

1. 1991 OpenData Incubator (1991 Open Data Incubator Agency n.d.) is the first non-profit incubator in Ukraine to help turn tons of open data into real startups that provide services to citizens, businesses, and government agencies. They cooperate with state agencies of all levels: from ministries to state companies and municipalities. Startups learn, get mentor help, and help with fundraising, networking, PR support, and even are provided with an office to work in. There are nine programs active in the incubator as of now. Incubator is a project of SocialBoost, which is being developed with the support of international funds, business and the Government of Ukraine.
2. Business incubator and startup school Sikorsky Challenge (Sikorsky Challenge n.d.). The “Sikorsky Challenge” is the first Innovation Ecosystem in Ukraine that has specifically been created to involve talented youth in innovative entrepreneurship. Here, ideas are grown and innovative startup companies are launched and developed. This is an environment in which everything from searching for new ideas and designing business models to attracting investments and creating new innovative businesses are carried out.

Other types of support infrastructure

- The UNIT.CITY Innovation Park is the first Ukrainian innovation park and the gateway to the UA tech scene. Their goal is to “become the center of innovations and a one-point entry into Ukraine for investors, partners and new technology from all over the world.” (UNIT.City n.d.). By renting a coworking desk or opening a company office at UNIT.City, one receives access to experts, investors, and other entrepreneurs. There is also a one-month program called “Entrepreneur-In-Residence” where the best startups are mentored by successful foreign entrepreneurs.
- The Startup.network (Startup Network n.d. a) is a professional network for participants on the venture market: startups, private investors, and professional consultants. It helps entrepreneurs find the first round of investment for their startups and investors in order to effectively invest and professionally consult. The Startup.network also offers services

and educational programs. The Startup.network is known for organizing Startup Battle events (Startup Network n.d. b) and Pitch nights. Crowd.inc (Crowd.inc n.d.) is Startup.Network's Fundraising Acceleration Program and was specifically created for startups that intend to bring their products to world markets.

- LIFT99 Kyiv Hub (LIFT99 n.d.) is a celebrated startup community space can be found in central Kyiv. LIFT99 is an international community of founders, future founders, and the key people that make up every startup team, a group that includes freelancers and other creatives.
- While it's not acknowledged publicly, several product development companies such as Genesis, MacPaw, Conceptor exhibit traits of so-called 'venture builders', helping internal and external teams to bring their products to market. The latter became catalysts for innovation scene development in an assortment of hotspots as a result of talent and methodology spill-overs, most notably Rocket Internet in Berlin.

The most of the above described accelerators, incubators and other facilities are located in 3 cities, 70% of them in are Kiev. This leaves other areas of Ukraine without any sort of startup education.

According to StartupBlink (StarupBlink n.d.) there are at least 20 coworking spaces in Ukraine, in reality there are at least 2 times more. Coworkings are used not by startups only, but also by small businesses for the sake of cost efficiency and become more and more popular overall. Thus, building a coworking area is a good investment of money in Ukraine.

There are multiple startup community events, like Silicon Drinkabout and Startup Grind as well as investment summits, startup battles, IT talk events, meetups, master classes and networking conferences. Legal, business, and financial/tax expertise can easily be found on the market, though this expertise is largely focused on opening companies outside Ukraine.

The main concerns in the Support Infrastructure component of the entrepreneurial ecosystem as seen by entrepreneurs, mentors, professionals, and investors are:

- Startup support infrastructure is still young and undeveloped
- Local startup schools and accelerators teach basic entrepreneurship skills instead of building and developing a powerful IT startup

- Local accelerators rise and fail, the ecosystem is rather unstable
- The lack of specialized startup accelerators such as <https://startupwiseguys.com/>
- Local accelerators have a very narrow focus and do not satisfy the needs of even the most popular areas for startups (e.g. SaaS, AI)
- Founders of Ukrainian startups prefer European, U.S., or Asian accelerators to local ones
- With the focus of Ukrainian IT startups on global development, local accelerators can not provide the necessary knowledge and network.

2.2.5 Human Capital ecosystem component analysis

Ukrainian educational system produces many STEM (Science, technology, engineering, and mathematics) graduates. Computer sciences and AI are two fields that have become increasingly attractive for students in recent years.

There are 150+ institutions where IT specialties are taught, with around 23,000 IT specialists joining the labour market every year (UNIT.city and Western NIS Enterprise Fund 2019).

Despite this, very few universities (Kyiv Polytechnic Institute, Ukrainian Catholic University, Kyiv School of Economics) offer support to entrepreneurial students. The vast majority of this support comes from initiatives that are grass-roots or corporate-driven. "... the people who favor ... a concept of Academic Entrepreneurship regard the State of Ukraine as the most important bottleneck for developing Academic Entrepreneurship. The following sentence was a more than common response: 'The regulation provides no mechanism for us to do xyz ...'. " (BE Berlin Economics GmbH 2015).

While there are many schools and courses to learn programming, sales and marketing tools, only several educational institutes (mostly private) and private initiatives offer a degree (Lviv Business School) and non-degree courses (GrowthUp) on innovation, entrepreneurship, and digital transformation.

Startup Schools

1. UNIT Factory promotes innovative development, taking part in the free training of talented IT personnel. The program is based on innovative Peer-to-Peer (P2P) learning techniques and anyone between 17 and 30 can apply (UNIT Factory n.d.).

2. Startup Depot is a coworking space in Lviv that has 4 educational programs: Startup School University Edition, which is a free startup school for students, Digital Marketing School, Product School and Unicorn me, an acceleration program for startups in their early stages (Startup Depot n.d.). The project is co-financed by Polish Aid (Polish Aid n.d.) and the Institute of Urban and Regional Development of Poland (IRMiR n.d.)
3. Startup Ukraine (Startup Ukraine n.d.) is the first educational center for entrepreneurs in Ukraine. Having started in 2012, they have trained more than 17,000 people teaching how to launch their project. The center has several programs: Business Camp, entitled "Made In Ukraine", the full program, called "Start Your Business", and online courses called "Startup Challenge".
4. The UCU Center for Entrepreneurship is a platform for studying and development according to the standard set out by Lviv Business School of UCU (LvBS) and Ukrainian Catholic University, providing teams with the necessary knowledge, mentor support, and advice of practical entrepreneurs for the realization of successful business projects. The center presently offers pre-acceleration and acceleration programs. The program for corporations is presently in development (UCU Center for Entrepreneurship n.d).

With nearly 5.7 million students in a country, **Ukraine is among the largest and most talented international student markets in Europe**. Between 2009 and 2016 the number of Ukrainians studying abroad increased by 176 percent to reach 66,648 students studying in 34 countries. (The International Trade Administration 2019 b).

Software development outsourcing is an important component of the Ukrainian economy. This direction not only makes a significant contribution to the country's GDP, but also helps to develop talents. However, at the same time, outsourcing is also a limiting factor in the development of startups. Talented engineers are highly valued in outsource companies and have no desire to leave for the uncertainty that awaits if they decide to try and create their own startups or join a new startup.

Ukraine has the largest and fastest-growing number of IT professionals in Europe. IT engineering workforce is expected to rise to over 200,000 by 2020 (Escarda Recruiting Agency n.d.). And while there are many talented engineers, highly qualified marketing, sales, and

business development specialists are a rare find. This is caused by the Global strategy of Ukrainian startups. While R&D centers remain in Ukraine, marketing and business development personnel are hired in the U.S., U.K., E.U. or Asia which leads to limited knowledge share and slow competences development.

The main concerns in the Human Capital component of the entrepreneurial ecosystem, as noted by entrepreneurs, mentors, professionals, and investors are:

- Talented professionals leave Ukraine, resulting in businesses being built outside Ukraine
- There's virtually no product development in the IT sector. The largest IT companies in Ukraine do not positively contribute or take steps to further innovation. Instead, they merely do outsourcing, which means they merely write the outsource code - a one time job that won't generate any long term revenue. This is evidenced by the fact that IT service export in 2016 reached \$3.6B (UNIT.city and Western NIS Enterprise Fund 2019)
- The higher education system is failing to keep up with modern development trends and cannot prepare personnel to be competitive outside Ukraine. While the number of courses in IT programming and administration is certainly growing, other areas remain undeveloped. In the context of the topic of this thesis, this is especially true of business education and the development of managerial and soft skills
- Universities cannot be called centers for the development of systems and technologies. If, during the time of the Soviet Union, certain experiments were conducted by universities, today they are either no longer being conducted or the equipment and centers have become outdated
- Research and scientific workers largely ignore entrepreneurship as an approach to commercialization. Clear tools and methods for commercializing R & D are missing or do not work properly.

2.2.6 Markets ecosystem component analysis

“With growth potential of four to five percent per year, many market watchers agree that Ukraine could and should be the next Poland if it were to capitalize on its enormous economic potential in agribusiness, information technology, trade-related transportation, and aerospace and defense. These same analysts agree, however, that despite recent progress under enormously challenging circumstances (conflict, annexation, foreign intervention, and trade blockades),

economic growth is most constrained by corruption.“(The International Trade Administration 2019 a).

According to State Statistics Service of Ukraine (State Statistics Service of Ukraine n.d.) Figure 11 shows the contribution of typical economic activities to country's GDP allowing to define the most developed domains on the market.

Figure 10. Economic and Financial Data for Ukraine, national accounts by GDP

SDDS Data Category and Component	Unit Description	Observations		
		Date of Latest	Latest data	Latest-1data
REAL SECTOR				
SA National Accounts (GDP)				
* Gross value added at market prices	UAH, million at current prices	Q1/19	807 755	1 048 023
By Economic Activities				
**Agriculture, forestry and fishing	UAH, million at current prices	Q1/19	24 459	139 058
**Mining and quarrying	UAH, million at current prices	Q1/19	49 175	63 008
**Manufacturing	UAH, million at current prices	Q1/19	87 131	118 033
**Electricity, gas, steam and air conditioning supply	UAH, million at current prices	Q1/19	36 063	28 929
**Water supply; sewerage, waste management and remediation activities	UAH, million at current prices	Q1/19	2 683	3 051
**Construction	UAH, million at current prices	Q1/19	17 077	32 002
**Wholesale and retail trade; repair of motor vehicles and motorcycles	UAH, million at current prices	Q1/19	110 590	134 818
**Transportation and storage	UAH, million at current prices	Q1/19	56 551	62 026
**Accommodation and food service activities	UAH, million at current prices	Q1/19	6 293	5 745
**Information and communication	UAH, million at current prices	Q1/19	36 876	38 913
**Financial and insurance activities	UAH, million at current prices	Q1/19	26 017	28 603
**Real estate activities	UAH, million at current prices	Q1/19	54 800	53 270
**Professional, scientific and technical activities	UAH, million at current prices	Q1/19	26 945	30 215
**Administrative and support service activities	UAH, million at current prices	Q1/19	12 891	12 450
**Public administration and defence; compulsory social security	UAH, million at current prices	Q1/19	57 216	60 836
**Education	UAH, million at current prices	Q1/19	41 454	42 428
**Human health and social work activities	UAH, million at current prices	Q1/19	22 605	26 713
**Arts, entertainment and recreation	UAH, million at current prices	Q1/19	5 031	6 109
**Other service activities	UAH, million at current prices	Q1/19	8 309	7 648
**Taxes on products	UAH, million at current prices	Q1/19	126 794	157 627
**Subsidies on products	UAH, million at current prices	Q1/19	-1 205	-3 459

Source: State Statistics Service of Ukraine n.d., Economic and Financial Data for Ukraine, accessed on 10th May 2019, <<http://www.ukrstat.gov.ua/imf/pokaze.html>>

As seen on Figure 10, the share of the industrial and agricultural economy is high. However, most assets, as well as the processes that the Ukrainian industrial companies possess, are outdated or do not allow them to remain competitive. The changes are slow. Additional

information about the top sectors of Ukrainian economy can be found at American Chamber of Commerce Ukraine 2019 report (American Chamber of Commerce Ukraine 2019).

Startups complain about local both B2C and B2B markets being small, insolvent or not ready for new technologies and solutions. Yet recently, businesses are becoming more aware of the opportunities posed by local innovation and entrepreneurship. These opportunities allow for the possibility of solving the issues of competitiveness and business continuity. However, these are still in the early phases of digital transformation or startup engagement. (UNIT.city and Visedrad Fund 2018).

Main concerns in Market component of entrepreneurial ecosystem, as seen by entrepreneurs, mentors, professionals and investors are:

- Corruption at all levels, in all areas and industries
- Outdated manufacturing assets and manufacturing technologies
- Low purchasing power, both in B2C and B2B. As a result, there is low demand for innovative products, many things are still being done in the old fashioned way
- Overall low use of new technologies for the nation as a whole
- Strong focus on the agricultural sector and production, services and products are underdeveloped
- The innovative direction of Ukraine is characterized by the development of IT projects. There is practically no innovation taking place in other sectors of the economy (due to both the expertise and the purchasing power of the market).

Seeing no opportunities on local market is another unique trait of Ukrainian startup ecosystem.

2.3 SWOT Analysis

SWOT Analysis is a useful technique for understanding the Strengths and Weaknesses, and for identifying both the Opportunities open to product or stakeholders and the Threats they face.

Developing a SWOT analysis for every ecosystem component will help to answer 2 questions stated in this thesis:

- 1) How healthy the Ukrainian startup ecosystem is?

2) How can the components that make up the Ukrainian startup ecosystem be strengthened to achieve further ecosystem growth and development?

Table 5. SWOT analysis of Politics startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Politics			
Proactivity of venture and business stakeholders in development of transparent legislation	The state has an observing and not an active position	The state understands the necessity of changes and is open for dialogue	Lack of strategic focus on innovation from the government
	Restrictive capital and foreign exchange controls	Provide a strategic view on innovation ecosystem, bringing different stakeholder groups together	The new legislation is a threat to corruption and thus there will be people in the government again changes
	Unstable financial system and currency	Bring foreign expertise and resources	
	Military conflict with Russia	Separating politics from business	
	Oppressive law enforcement agencies		
	Lack of trust in judiciary		
	Widespread corruption		
	Low social protection of population overall		

Source: Personal elaboration

Table 6. SWOT analysis of Finance startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Finance			
Being global, startups do not depend that much on local investments	The lack of pre-seed and seed capital	The pre-seed gap can be closed with public grants or other types of financial support from	Local VCs may not get any good deals because of the global nature of Ukrainian startups and

		the state using public money and the money of investors brought into the country	interest of foreign VCs in them
The VCs and angels are united into associations trying to act together rather than separately	VCs are interested to invest in startups with traction	Develop more trust between VCs and startups	
Record startup investments in recent years (most from foreign investors => expertise and international connections brought by these VCs)	People with an average salary cannot save money and start a business even if they wanted to	Building local crowdfunding platforms	
	Low number of local VCs		
	Angels "remain in the dark"		
	The equity is expensive		

Source: Personal elaboration

Table 7. SWOT analysis of Culture startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Culture			
Focus on global development makes startup founders go for more	Pressure of going global can stop people from trying	Post-soviet mindset is unknown to young entrepreneurs	Startups are mostly popular with millenials, who have a different mindset but no expertise
Media starts paying attention to startups and their achievements	The number of successful serial entrepreneurs who remain active in Ukraine is very small	Some great startup stories are already out there	
	Lack of great startup stories and thus motivation to try it		

Table 8. SWOT analysis of Support infrastructure startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Support infrastructure			
	Weaker program of local accelerators compared to EU, USA and Asian analogues	Growing interest of corporations in open innovation	Startup founders will "skip" local accelerators leading to infrastructure decay
	Mentoring and support structures are not institutionalized	Emerging interest of corporation to startups overall	
	Weak knowledge-transfer between businesses and R&D institutions		

Source: Personal elaboration

Table 9. SWOT analysis of Human Capital startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Human Capital			
Popularity of ICT among students and high schoolers	Absence of world-level business education and specifically of profile startup business education. As a result - low business expertise		Declining science and tech on a country level as a whole
Strong programming/IT engineering programs in Universities	Talented specialists leave the country		
Many IT engineers to cover market needs and their number is growing	Lack of marketing and business development expertise		
Strong software development outsourcing sector, which helps to develop local talent	Low desire of IT engineers to go for a startup		
	Zero to none connection between scientists and entrepreneurs		

	While we hear a lot about MIT startups, there's no academia startups in Ukraine		
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Source: Personal elaboration

Table 10. SWOT analysis of Markets startup ecosystem component

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS/CHALLENGES
Markets			
	Ukrainian businesses as a whole can hardly compete with businesses from other countries	Introducing open innovation can lead to creation of competitive advantages as well as lowering the cost of manufacturing and maintaining	Not developing and implementing innovations for the local market will result in constant economic stagnation, where manufacturing businesses won't be able to compete with EU and other developed countries
	Low purchasing power and sophistication of the Ukrainian market		
	Undeveloped local markets		
	Low innovation level inside businesses		
	Low usage of technologies		
	Raw material rather than product economy		
	Key industries barely invest in R&D and rely upon low-value-added models		

Source: Personal elaboration

While at this point we have an overview of Ukrainian IT startup ecosystem, it was so far developed without direct participation on the main ecosystem stakeholders the startups. The questionnaire that will be discussed in the next chapter was developed as an organic continuation of literature review. The goal of the questionnaire is to confirm, reject, or see from the other angle the strengths, weaknesses and opportunities of the ecosystem as well as research the challenges startup founder directly face when launching and running an IT company in Ukraine. This data will complement the already performed research and will help build a full picture of Ukrainian startup ecosystem as seen by all stakeholders and provide recommendations for further growth, strengthening and development.

3. Methodology for the research

3.1 Developing the questionnaire

The questionnaire was developed in a way so that questions would cover all the important components of startup ecosystem and help assess what problems the startups experience when starting and developing IT companies in Ukraine. The questionnaire consists of 7 sections:

- General information about the project
- Startup knowledge set and the first steps in the role of entrepreneur
- Markets
- Getting investments
- Ukrainian startup community
- Public and startups in Ukraine
- Your view of the startup ecosystem

Each section further contained on an average of seven questions.

3.2 Finding startup founders to contact

Ukraine Startup Map on StartupBlink has 386 startups listed and I considered this a good starting point. However working with the list I have realized that this is quite a mix of companies at various stages, from those with a strong traction and multi-million dollar investment to those just taking their very first steps.

While the information received from startups on the zero or MVP states is also important, more mature companies would be of more value to this thesis, taking into account deeper immersion into the startup ecosystem.

One of the metrics that speaks to some level of maturity for the startup can be the fact of receiving an investment. I have taken this as the basis for the sampling. I have further researched the dealbooks of Ukraine (list of investment deals) from 2014 up to the second quarter of 2019. The following dealbooks were used:

- 1) The Ultimate Report About The Ukrainian Startup and Venture Scene 2016 Edition, covering 2014 and 2015 deals (Aventures and Ukraine Digital News 2016)
- 2) The Dealook of Ukraine Ultimate Report on Ukraine's Venture Investment IT Industry 2018 Edition covering 2016 and 2017 deals (Aventures 2018)
- 3) Dealbook of Ukraine 2019 edition covering 2018 and 2019 deals (Aventures 2019)

This led to a final list of 242 companies. Some of the records were duplicated over the years as additional funds by startups were raised.

The next step was to figure out the founders of every company and their short history to understand what in the survey would be relevant for them. For example, there was a team of Ukrainians who moved to Poland years ago and though the company is registered in Poland and Investments came from a Polish fund, the company was still listed in the deal book, thus the questions about the Ukrainian startup ecosystem would be irrelevant. There are also multiple companies with several founders, one of them a Russian founder (irrelevant to question) or one a Ukrainian one. This said, a significant amount of initial research was conducted to find the proper contacts.

Also during this research I found out that some startups from the dealbook no longer exist and the sample was reduced by 72 companies, with a total of 170 companies remaining in the sample.

3.3 Contacting startup founders

The next step was to find the contacts of the startup founders. From my sales and marketing experience I understood that sending cold emails asking to take part in a questionnaire would

bring no results (no time, motivation, nor interest of participating in the survey) and that personal contact with cofounders would increase the chances of getting responses. So the option of sending mass email via an accelerator database or other methods was not really an option. At present, Facebook in Ukraine is widely used for professional networking. Further steps taken were:

- 1) Finding the profiles of startup founder
- 2) Sending friend invites
- 3) Thanking them for adding me when added and asking whether they would agree to take part in the survey
- 4) If yes, sending them the link to the survey

Additionally and because of my career in IT and relationships with some start-up owners, investors, IT HR directors, and influencers, I also reached out to all of them asking to make a post in their Facebook feed asking startup founders to participate in my survey.

I also had to define what would be the best time of the day to send the friend request. During the initial outreach I realized that the best time to reach startup founders in Ukraine would be after 8-9 pm when they are already done with their daily routine and might be going home or had already arrived home and could devote some time to the questionnaire. For the founders living in the US, the friend requests would be sent around 4 pm Ukrainian time which is early morning in the US when people are likely to just be starting their daily routines. Interestingly, founders from US were more likely to participate in the questionnaire than founders living in Ukraine. To motivate founders to take part in the survey I was also offering my IT marketing and sales expertise.

Table 11: The results of the Facebook outreach

Action	Quantity	Percentage from sampling
Number of friend requests sent to startup founders	162 (sampling 1)	100%
Number of friend requests confirmed	94	58%
Number of requests sent, asking if the person would be interested to participate. About 15 founders are my acquaintances from earlier periods and they were added to the list,	109 (sampling 2)	100%

forming my reachable sampling 2.		
Number of people who read and never responded back	43	39.5%
Number of people not interested	17	15.6%
Number of people who said they will take a look when they have time	49	45%
Number of people filling the questionnaire	18	16.5%

Source: Personal elaboration

The survey took 1.5 months since the first startup founder was contacted asking whether he or she would agree to take part in the survey. The problems faced during research

- 1) Seeing no profit for themselves, startup founders were not interested in participating. A message that the survey would be beneficial for the entire Ukrainian startup community did not increase their chances of participating
- 2) The questionnaire is very long and required 15 to 20 minutes of their time. Many of the questions required detailed responses to better understand both the challenges, trends, and specifics
- 3) The groups contacted were much more concerned about growing their businesses than participating in social research.
- 4) Not being a part and known member of the startup community, many of my requests were never answered.

3.4 Changing the sampling and developing a second questionnaire

In order to get more startup founders to take part in the survey I contacted RE: ACTOR international open innovation platform (REACTOR UA LLC n.d.), Ukrainian accelerators and hubs to help me spread the survey. I received positive feedback from RE: ACTOR where they agreed to send a link to the survey by email to their network of startups and share it in social networks for the exchange to be able to publish the survey results in Ukraine as research of this type has never been performed before.

The questionnaire was reduced to 6 sections, some questions received predefined answers. The core of the questionnaire remained the same. The questionnaire was sent to 250 email

subscribers, shared in social media and published in startup groups on Facebook resulting in 20 more answers.

The results of both surveys were then combined for an aggregated analysis. A total of 38 startups have participated in both surveys.

3.5 Sample size and the margin of error

Using sample calculator by SurveyMonkey (SurveyMonkey n.d), where:

- N = 386, data based on <https://www.startupblink.com/startups/ukraine>
- desired confidence level= 95%
- 5% margin error

The sample size was calculated as 193.

Doing the reverse math: the number of received answers =sample size =38

That makes 16.6% margin of error.

Since there are no benchmarks for an acceptable margin of error in social sciences, I would consider the number of responses received sufficient taking into account the high quality of data received.

4. Results of the empirical study and Findings

4.1 The profile of the startups that participated in the survey

I would like to start my analysis with the understanding who are Ukrainian startup founders, what they have in mind, how they got started, how educated they are.

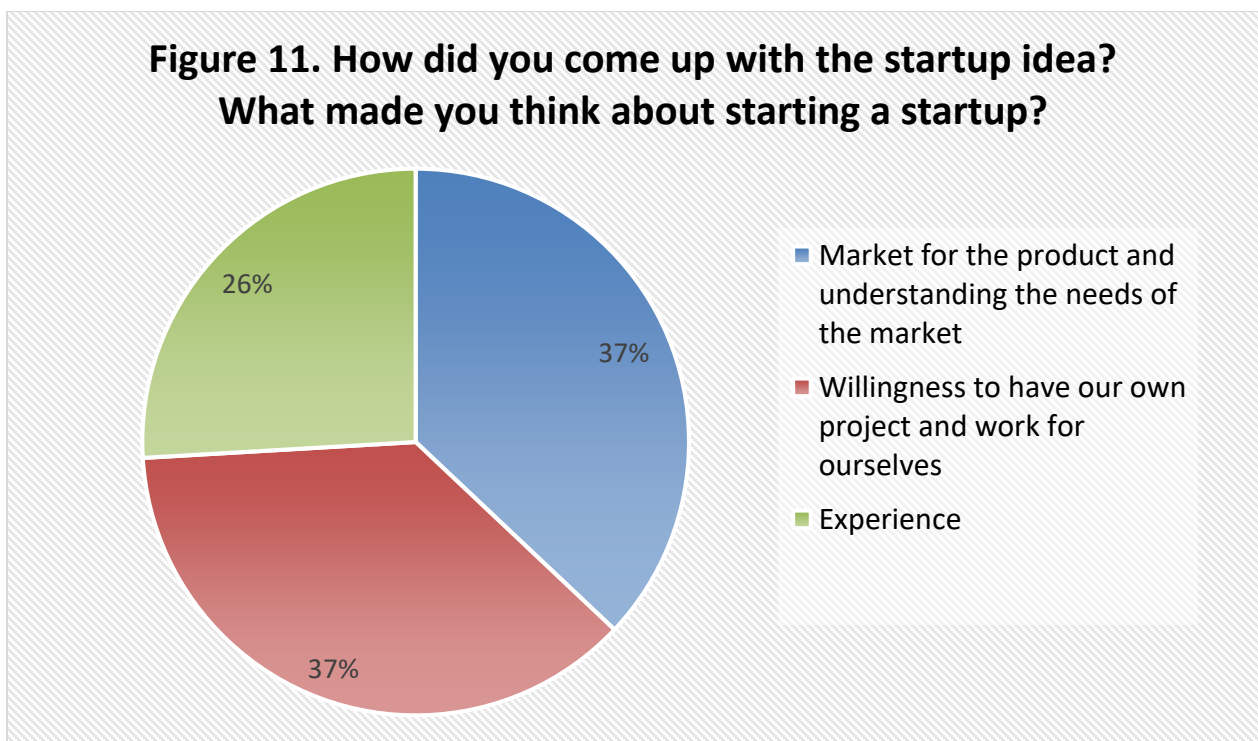
Also for the sake of this research, it is important to analyze how diverse the sample is. The more different representatives of the startup ecosystem participated in the survey, the more precise picture of the startup ecosystem from the view of the startup founders we can get.

All the graphs presented below are personal elaboration of survey results. The survey questions are listed in Appendix A. the answers (in Russian) could be provided upon request.

There are three main reasons that made startup founders think about the startup, and interestingly, though very different in sense, they all approximately have the same share. These are:

- They've got an idea that was needed by the market
- They had previous experience
- Or they wanted to work for themselves

Thus, it can be said that 63% of startup founders are very analytical while the others were moved by the wish to create something useful and something on their own.



Most of the startups that participated in the survey are comparatively mature, which makes this research more valid, since they have been the part of the ecosystem for some time. As Figure 13 shows, some of them have grown quite big in size, having up to 50 people in a team. Yet, 50% of startups are still very small, meaning they are on the very early stages of development. This confirms that the sample is diverse and results are objective. At the same time it reveals the problem of underfunding and restrained projects' growth.

Figure 12. How old is your project?

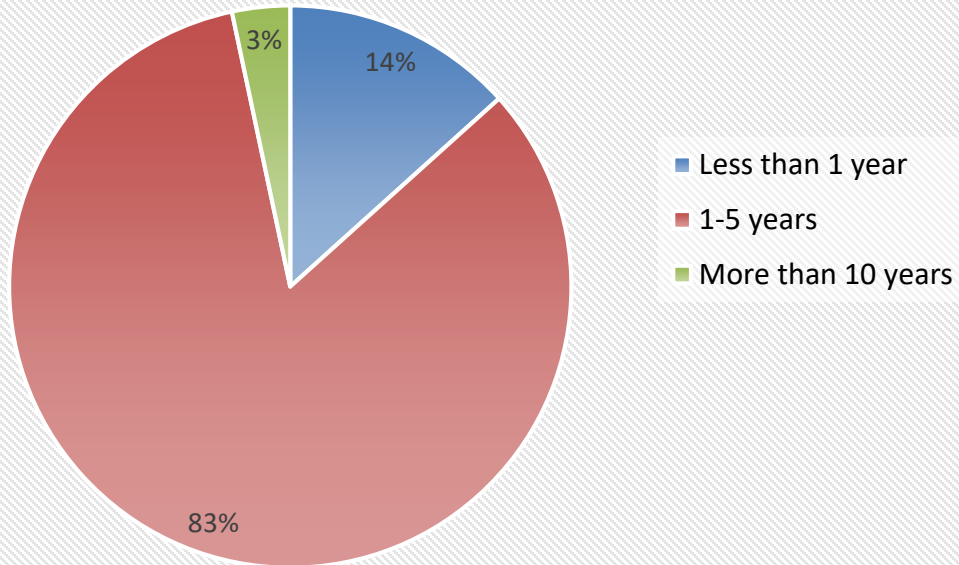
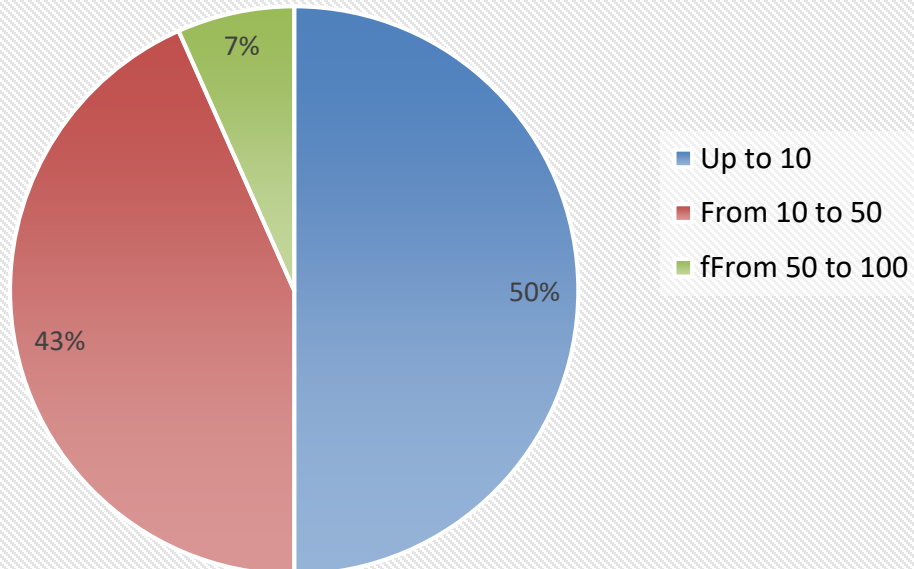


Figure 13: How many people you have in your team



Startups in Ukraine are usually founded by 2-4 people who knew each other long before the start- either friends, colleagues or classmates. As a rule, the teams are formed with strong competences from the very beginning, where one founder is responsible for technology and the other partner for product and marketing. Also often, one of the founders would have previous business experience.

Figure 14. How many people founded the project?

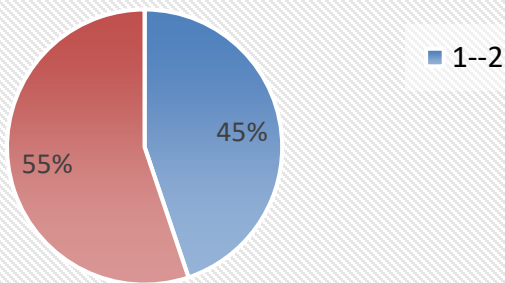


Figure 15. Was it easy for you to find cofounders/partners for the startup?

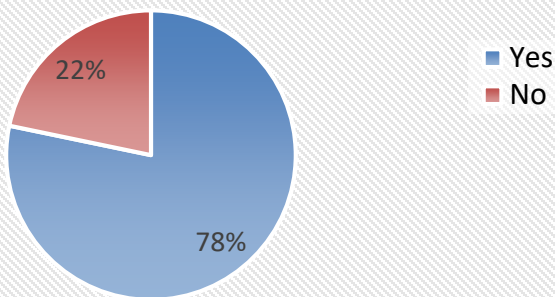
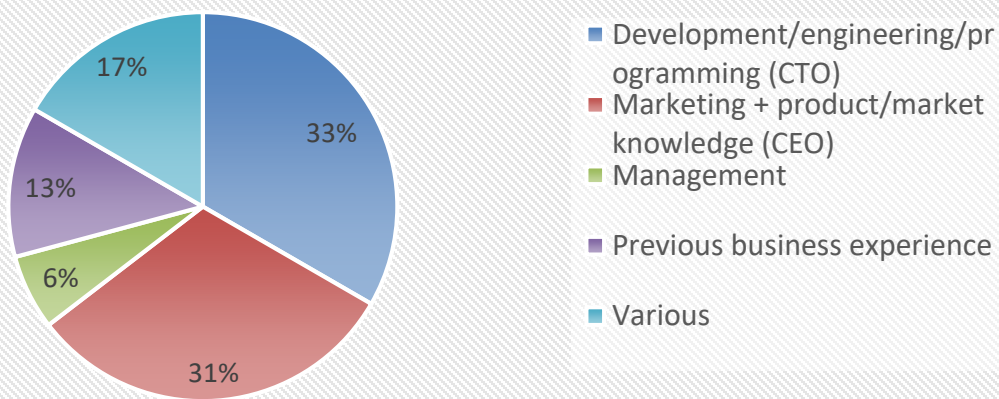
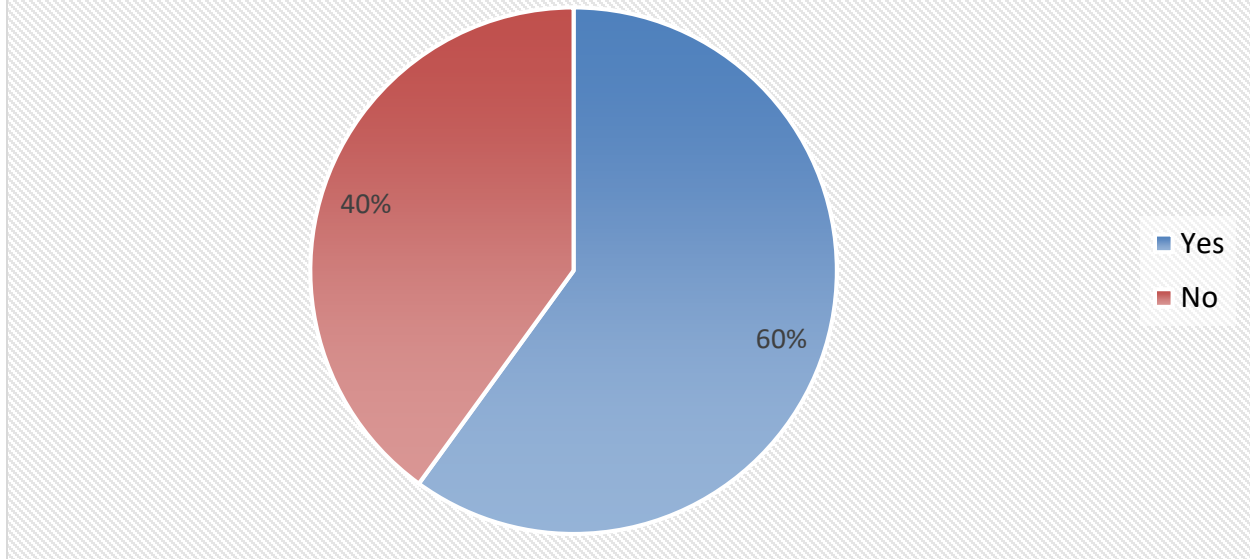


Figure 16. Which competencies did every founder have?



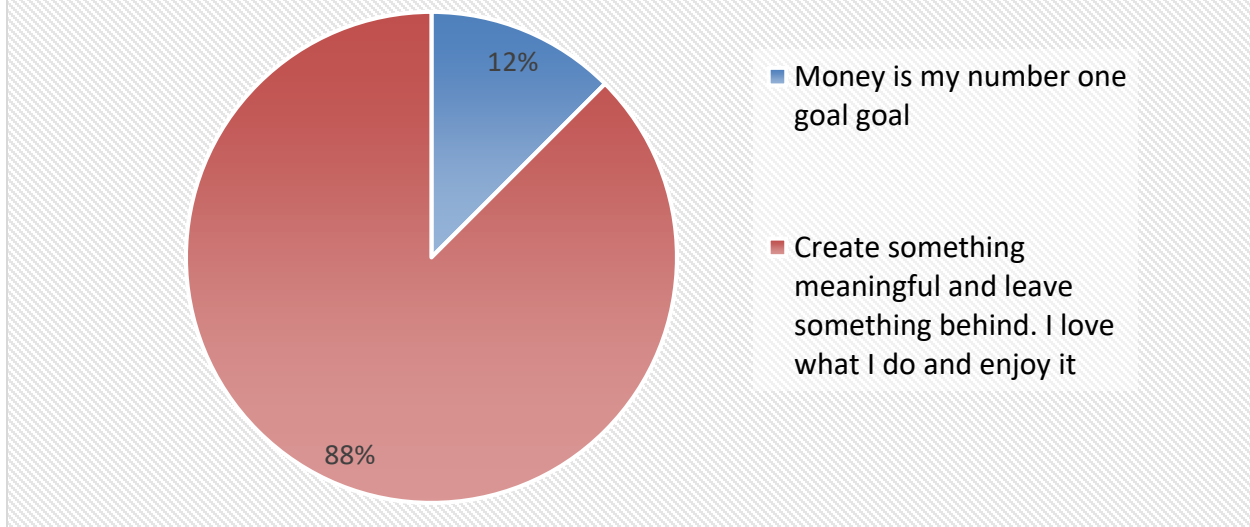
The majority of startup founders have characterized themselves as serial entrepreneurs, meaning they either have several projects or plan building more in the near future. So the entrepreneurial spirit is high.

Figure 17: Can one name you a serial entrepreneur?



While it may initially seem that the reason why startup founders would want to work for themselves would be money, almost 90% of respondents mentioned creating, self-realization and leaving something meaningful behind.

Figure 18. What's the goal of running your startup? To sell it later or do you completely enjoy the process of being the owner and founder?



While it is worldwide considered that business education is a way to success, the majority of startup owners in Ukraine do not have a specialized business education. The entrepreneurship knowledge was mostly acquired at accelerators, googling and online courses and some knowledge was acquires through community communications and networking.

Figure 19. Do you have a specialized business education?

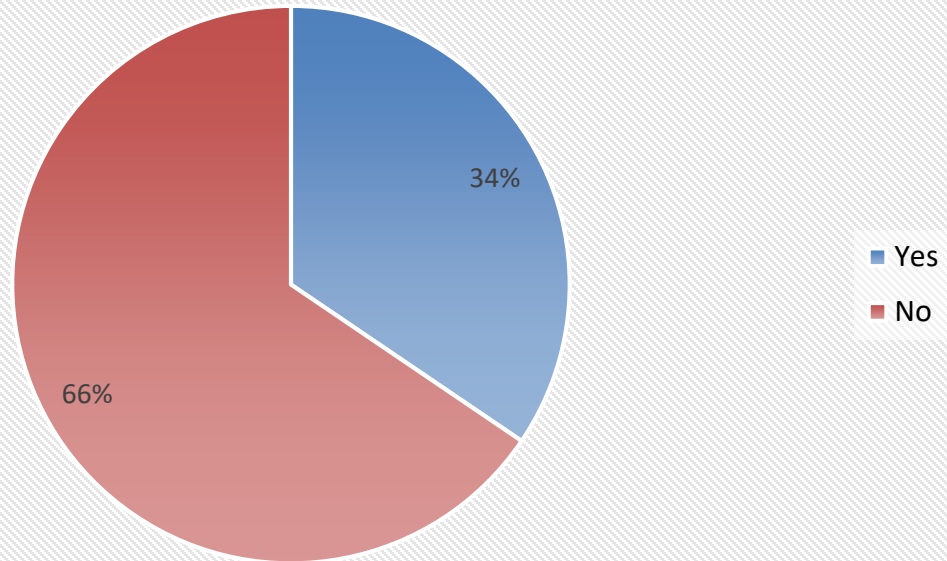
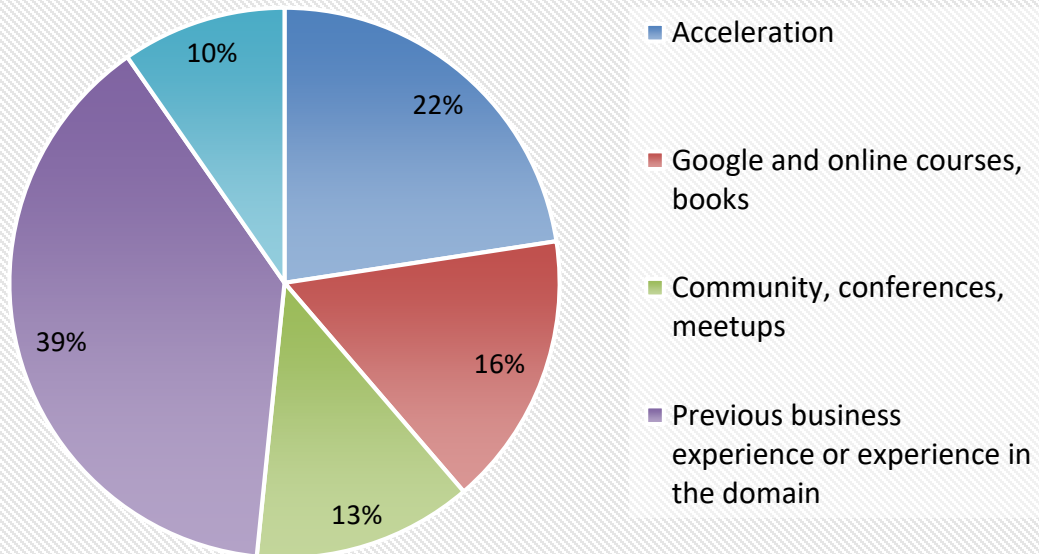


Figure 20. Where did you receive the initial knowledge to start working on your project?



60% of the startup founders started companies with personal savings ranging as a rule between \$5K-\$50K. 40% of startup owners subsidize money from other recent businesses or businesses they sold. What this data can tell us is that both groups are ready to take the risks. The first group is ready to try to build the product with very limited capital. The second group is reinvesting and can lose money they have.

Figure 21. What was the source of the money at the start?

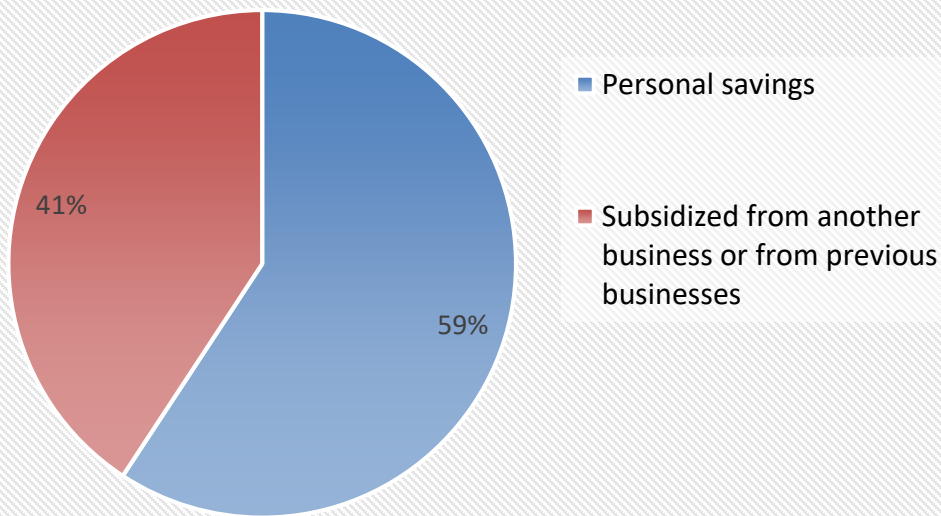
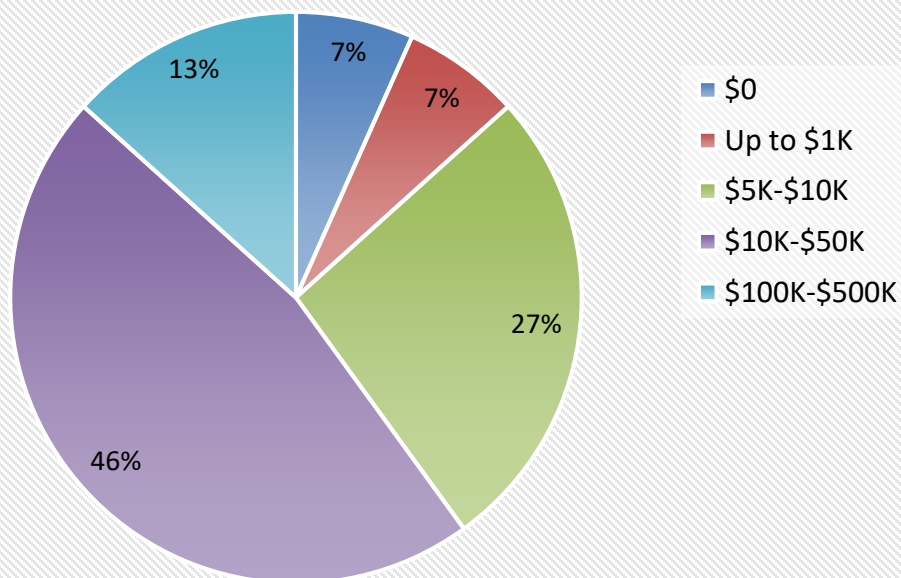
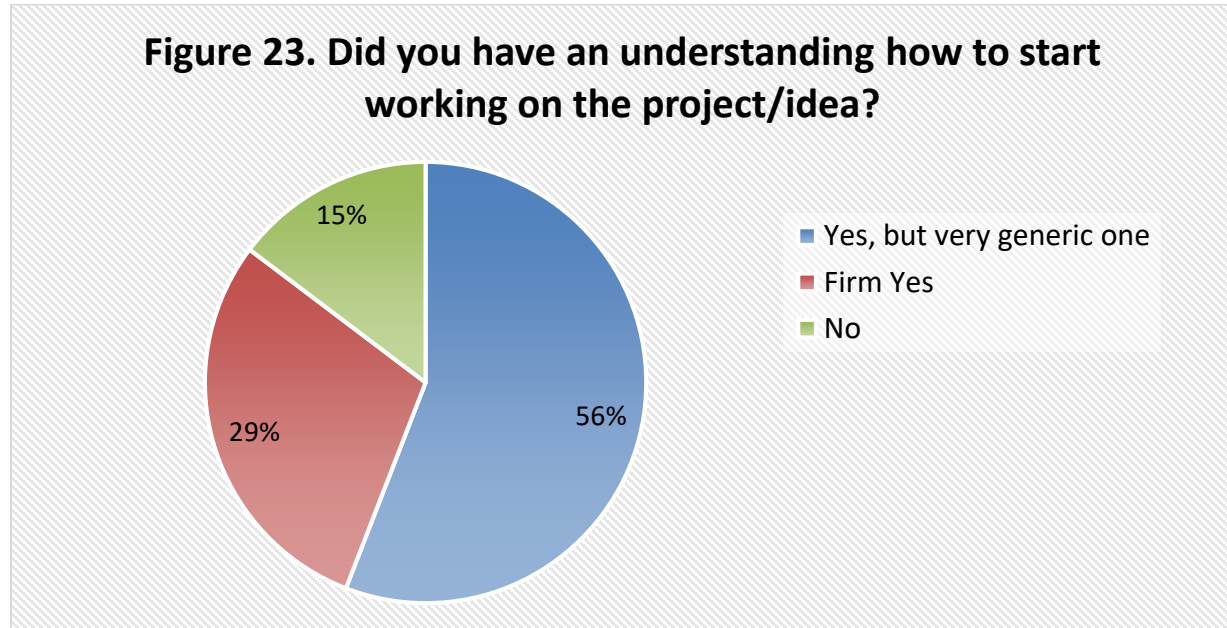


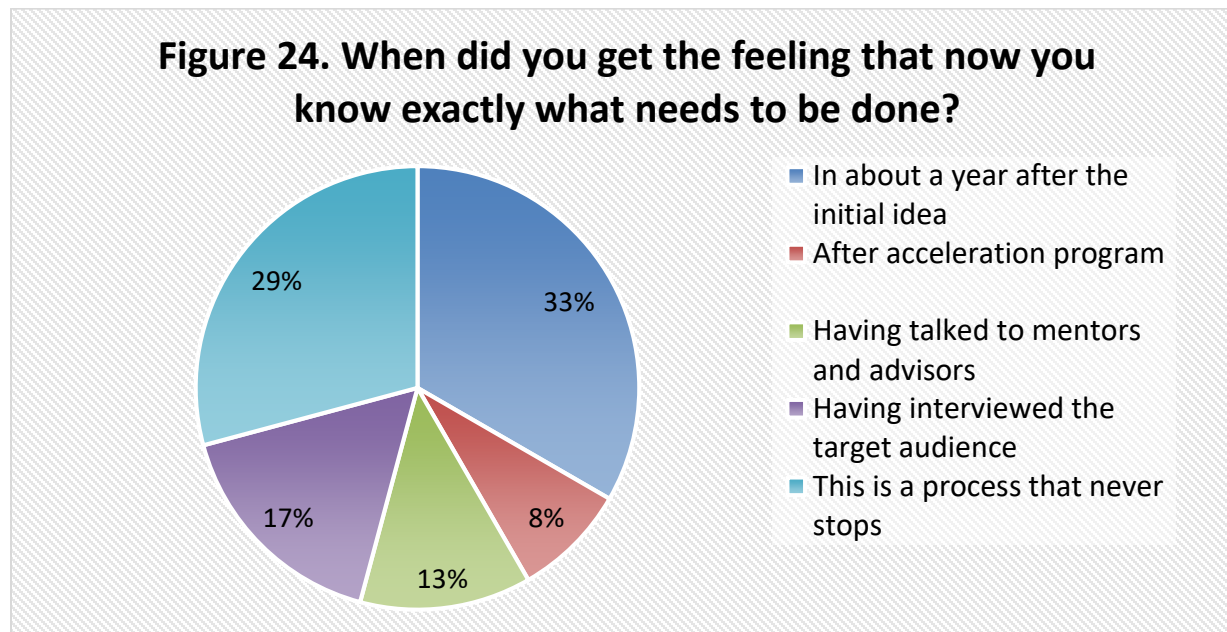
Figure 22. How much money did you have at the start?



Interestingly, as shown on Figure 11, 63% of startup founders either knew the market very well or had a previous business experience, but only 29% of respondents answered firm ‘Yes’ to the question whether they understood where to start from, as Figure 23 suggest. 56% had a very basic understanding.

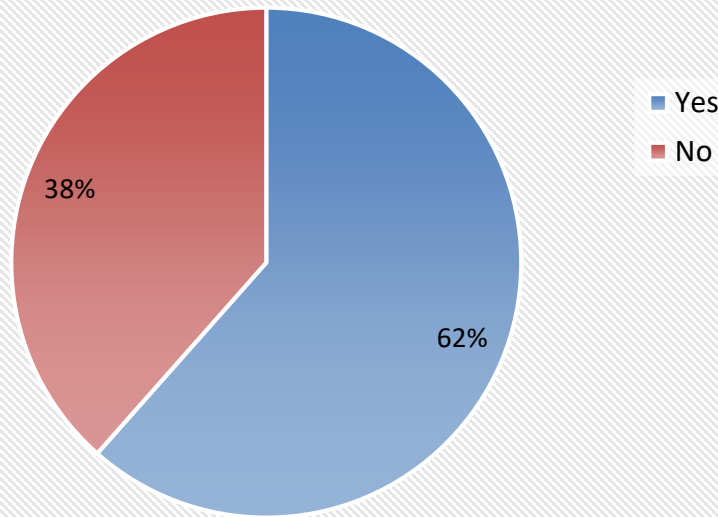


It took them some time to learn the ‘startup science’ before they came to understand what needs to be done. This was either after a year of research, speaking to target audience, market tests and learning through constant testing and making mistakes. Only 8% indicated that accelerator helped them in the setup process.



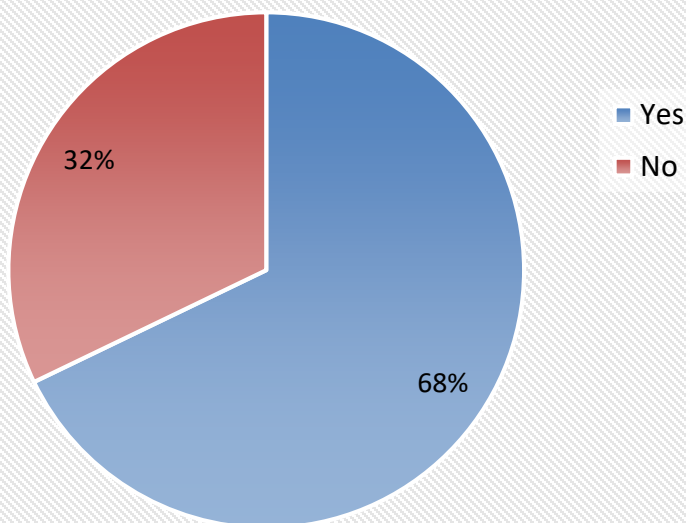
At the same time, 62% of respondents have been the part Ukrainian accelerators and business hubs. Reflecting on data on Figure 24 one can suggest that the recent programs of accelerators are of not much help to startup founders and need a revamp.

Figure 25. Have you been a part of the Ukrainian accelerator/ business hub?



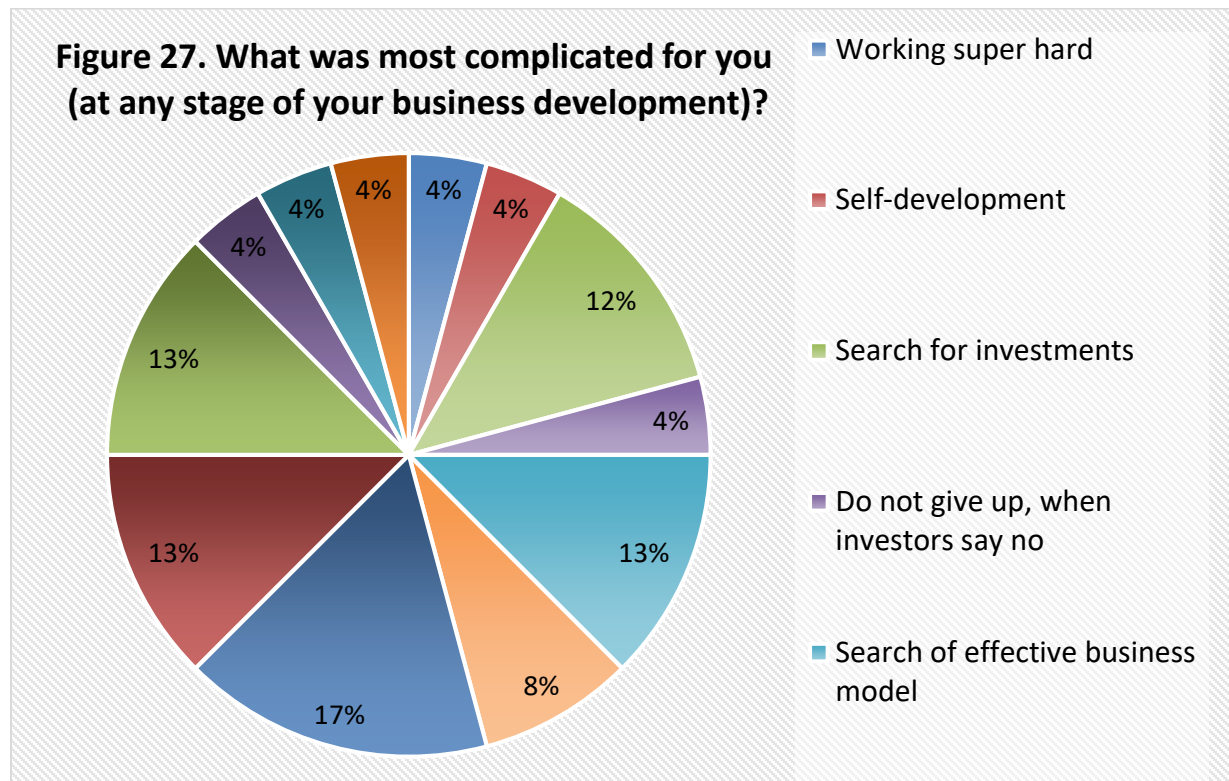
Most of the startup founders are socially active and visit startup events, meetups, workshops and startup battles. The other 32% are serial entrepreneurs. As a rule, they have their own communities and are not interested to attend events for companies that are just starting.

Figure 26. Have you visited Ukrainian meetups with investors or startup battles?



Having several profiles of Ukrainian IT startup founders we can further move to explore the challenges that startup founders have when launching and running IT startups.

There is quite a variety of things that startup owners listed as most complicated on their path as figure 27 suggests, without any preponderance of some common challenge.

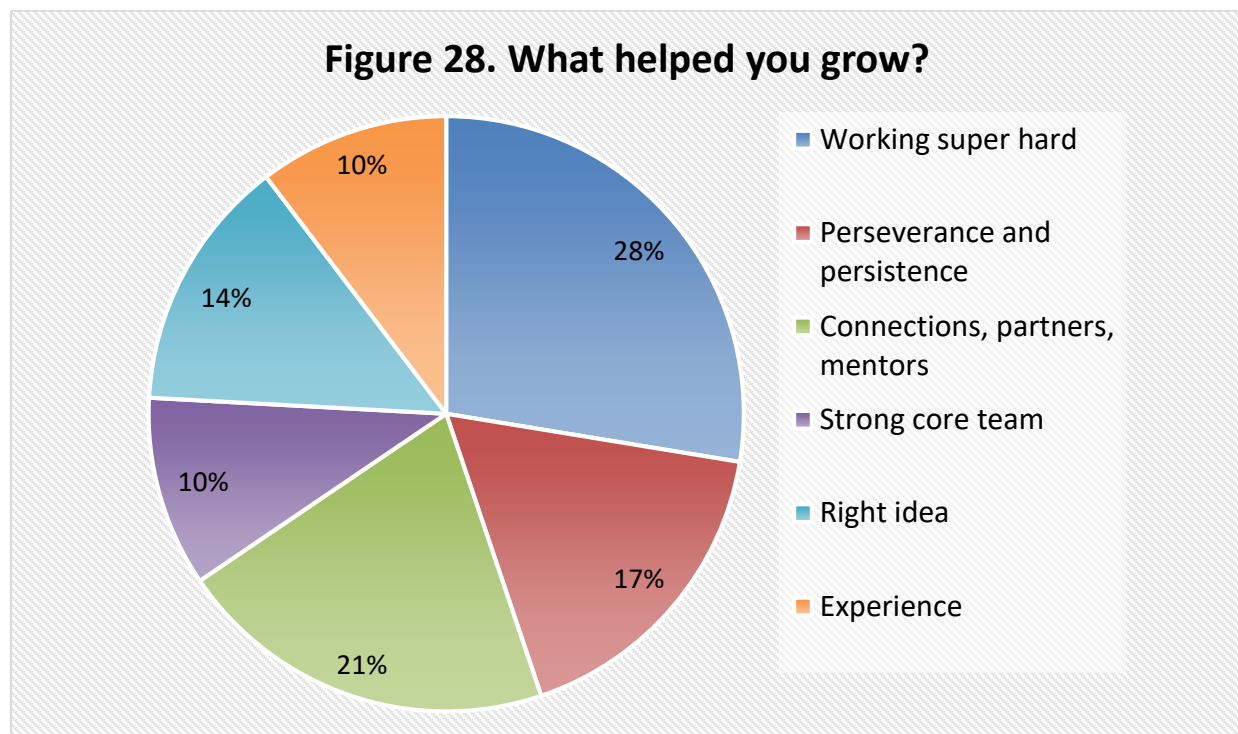


The following challenges have been mentioned:

- Working super hard
- Self-development
- Search for investments
- Do not give up, when investors say no
- Search of effective business model
- Finding right market fit and audience
- To sell ideas to target audience
- Effective user acquisition and traction
- Need of constant changes (team, sales system, user acquisition methods, monetization)
- Lack of planning skills in our conditions of uncertainty
- Forming the right business processes and their implementation

What is interesting about this data is that startup founders see challenges in their inner kitchen and do not see challenges in any of the startup ecosystem components except for finances. This creates a feeling that Ukrainian startups questioned do not really depend on the Ukrainian ecosystem components, which as seen in the literature review section, are weakly developed. How could it be that Ukrainian startups exist outside of Ukrainian startup ecosystem?

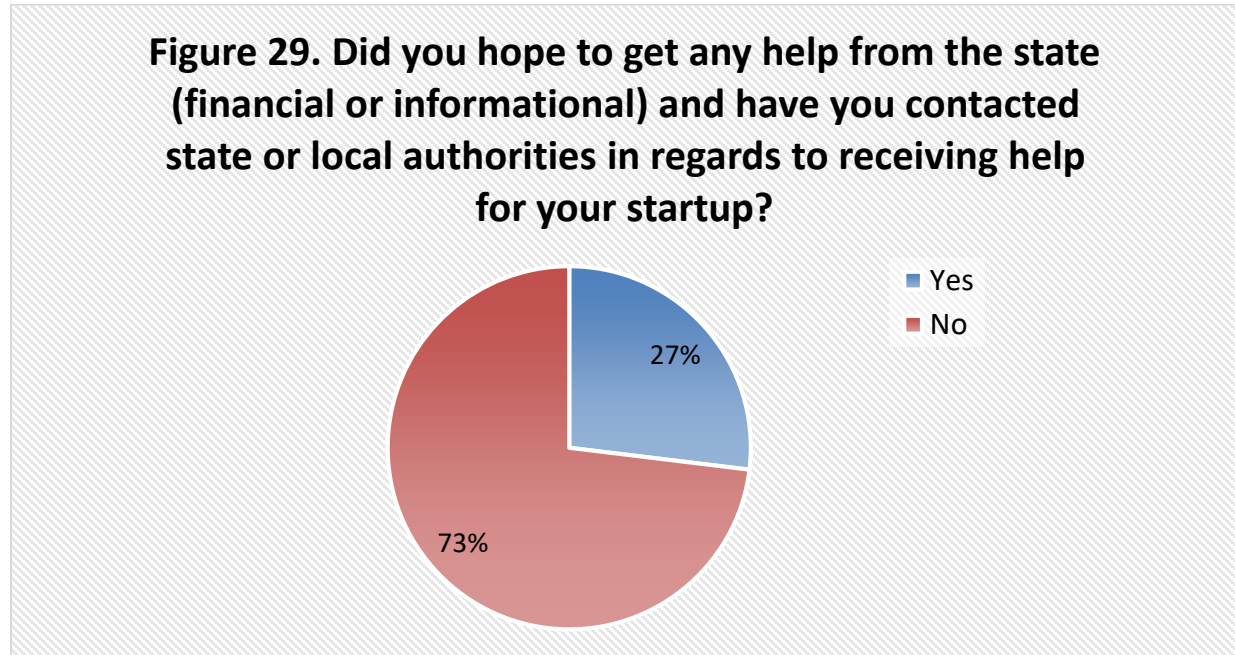
Another interesting finding comes from Figure 28. 80% of startup founders list hard work, persistence, right idea, strong core team and experience as the core of their success and as the factors that helped them grow. Only 21% mentions the impact of partners, mentors and connections established. Does that mean that mentoring and networks are also weakly developed in Ukraine? Does the fact that startups rely mainly on themselves means that they receive no support from outside?



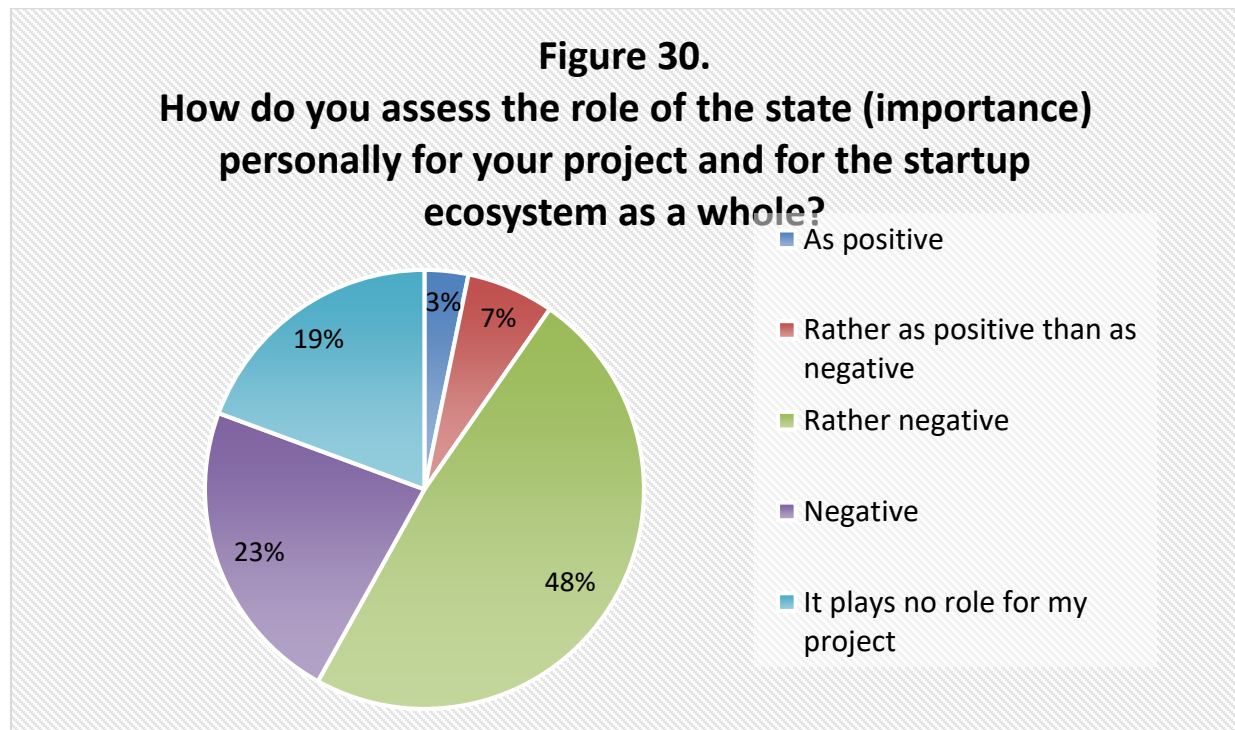
We will answer this and other questions in the further sections of research.

4.2 Relation of startup founders to Policy ecosystem component

Figure 29 clearly shows that Ukrainian startup founders did not expect to receive any help from the state when starting the IT company.



As seen in Figure 30, 71% of respondents think that the state of Ukraine has a negative impact on startup ecosystem, 19% of respondents openly say that the state plays no role for their projects, and only 3% of respondents see the impact of state of positive.



Saying this short, startup founders do not expect any help from the state and think that the state plays no role for their projects. In other words. **This said, Ukrainian startups are not dependent on the state.**

4.3 Relation of startup founders to Finance ecosystem component

Around 60% of Ukrainian startup founders have been in touch with Ukrainian investors. Out of those startups who have received an investment, only 33% have been 100% funded locally and 45% of startups have 100% been funded by foreign investors.

Figure 31. Have you been searching for investors in Ukraine?

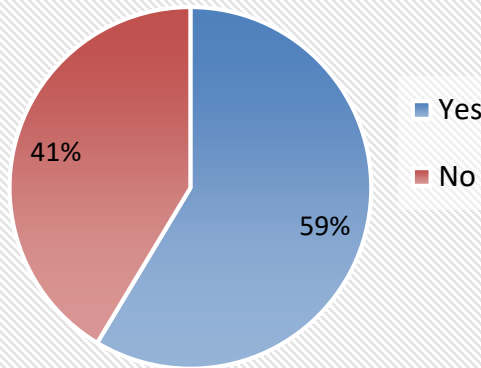


Figure 32. What's the total amount of investment you raised?

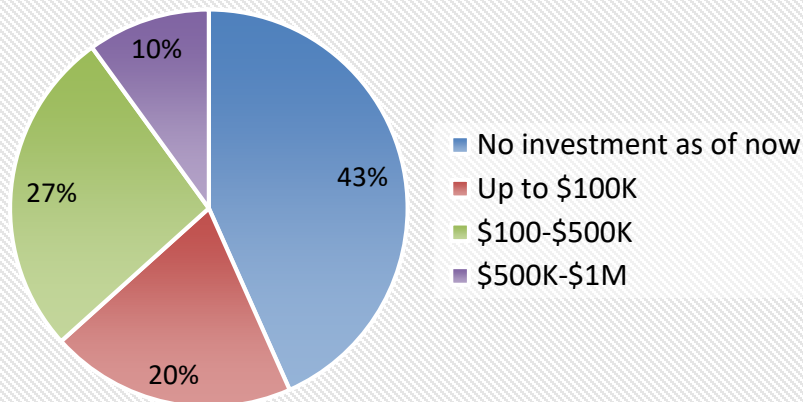
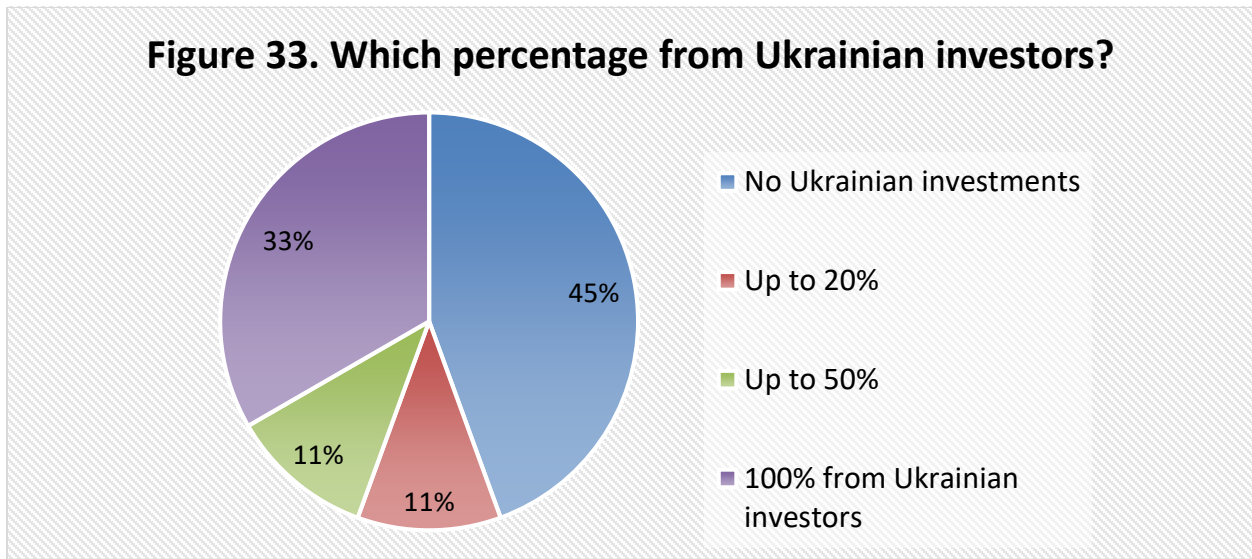


Figure 33. Which percentage from Ukrainian investors?



When asked about the overall experiences when looking for an investment the following challenges were listed:

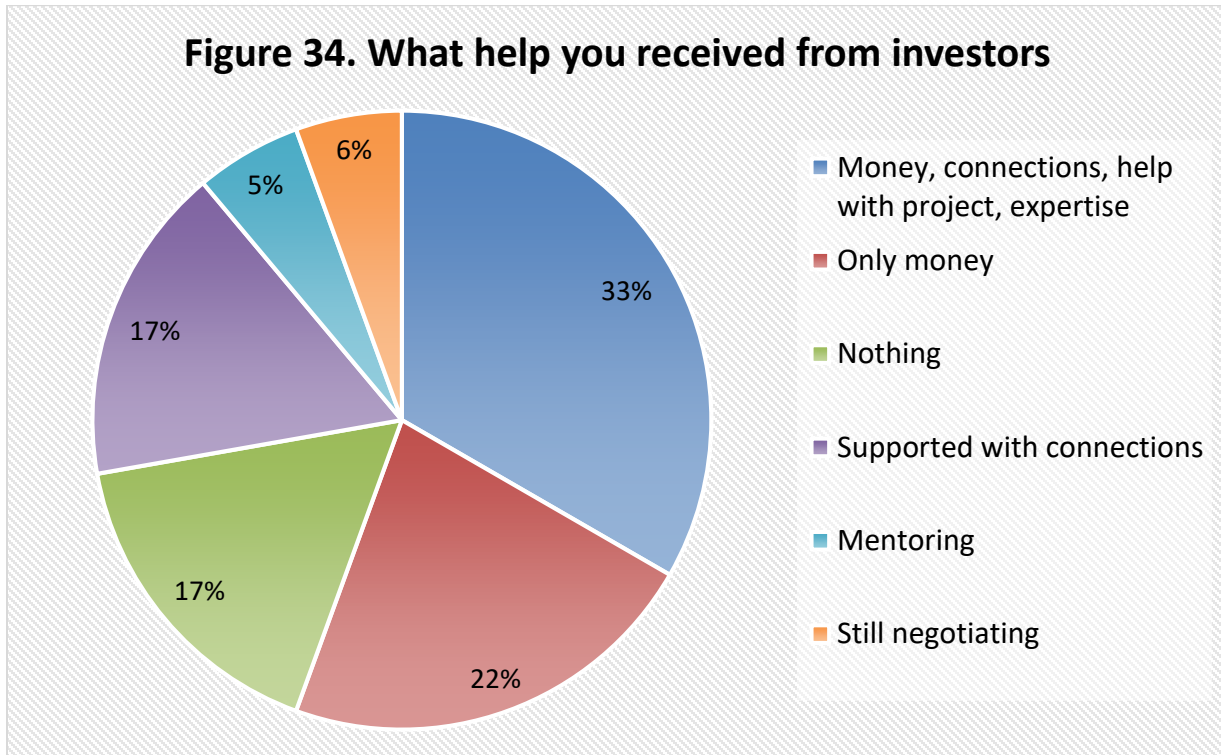
- "Found 9 angels from 112 requests sent"
- Investors came when we started showing results
- More relevant and interested investors are abroad
- Investors in Ukraine have no money

When asked which problems and challenges startup founders faced speaking to an investor, the following answers were received:

- It's complicated overall. One has to adjust to work with different investors on different project stages
- Low knowledge and understanding of the venture capital market
- Local non-institutional investors do not understand the format of venture investment
- Investors need a working business with high profitability, no one wants to invest early and take risks

This vividly speaks about the way that founders feel about local investors, they see them as not interested and not true.

Figure 34 shows that venture funds are providing all type of support expected, including money, connections and expertise.



At the same time, 53% of startup founders mentions negative experiences working with investors and **overwhelming 92% say that there is a problem with funding for startups in Ukraine.**

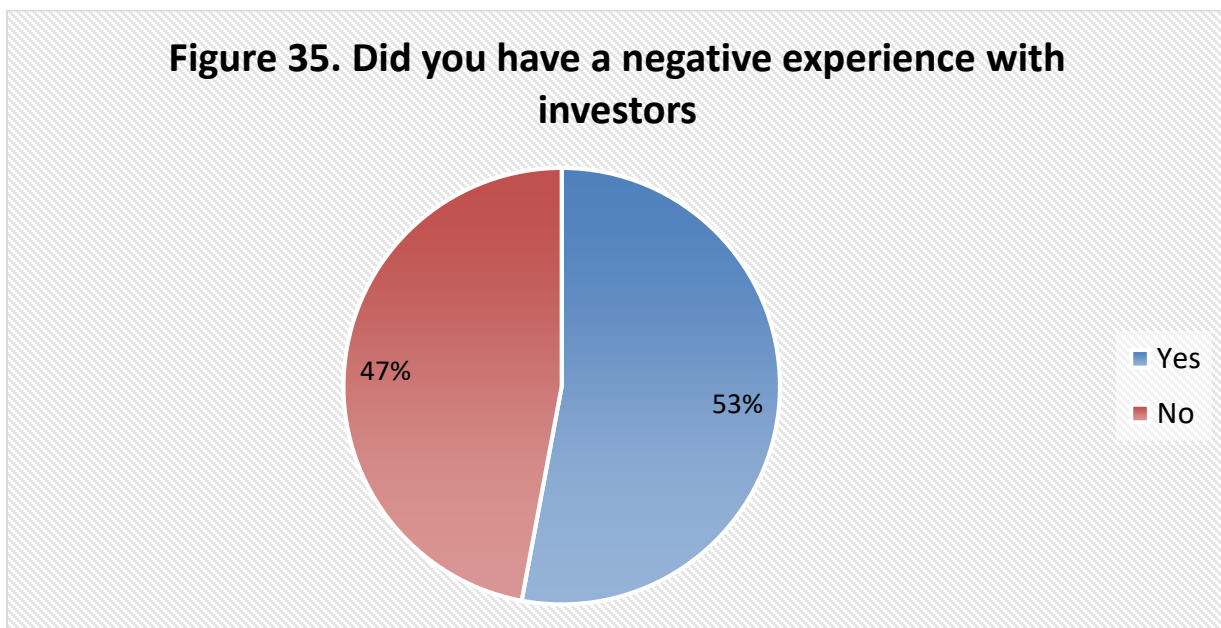
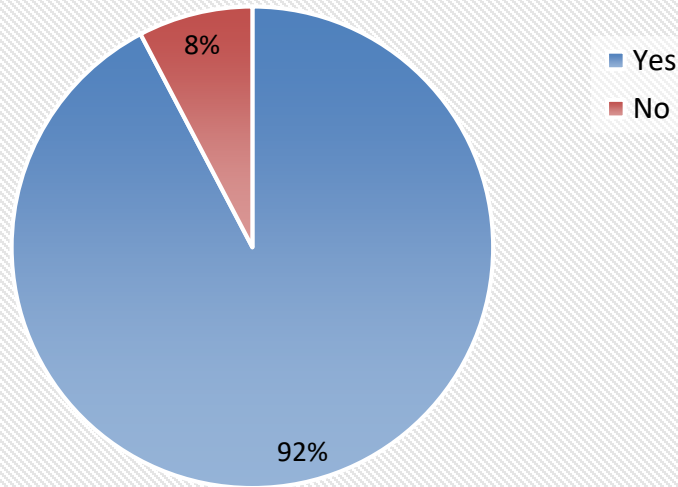


Figure 36. Do you think that in Ukraine there is a problem with funding for startups?

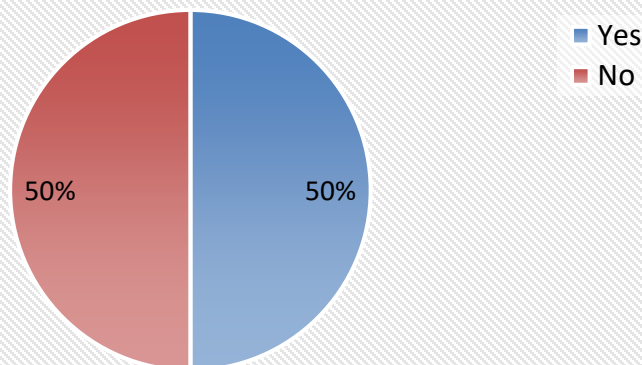


Summing up the findings from the questionnaire, the relationships between Ukrainian IT startups and Ukrainian capital are complicated. **While local VCs show little interest, Ukrainian startups got skilled getting foreign investments. This said, they are not strongly dependent on the local capital.** However, the condition for getting the foreign investment is international or global targeting and often hiring international marketing and sales teams.

4.4 Relation of startup founders to Culture ecosystem component

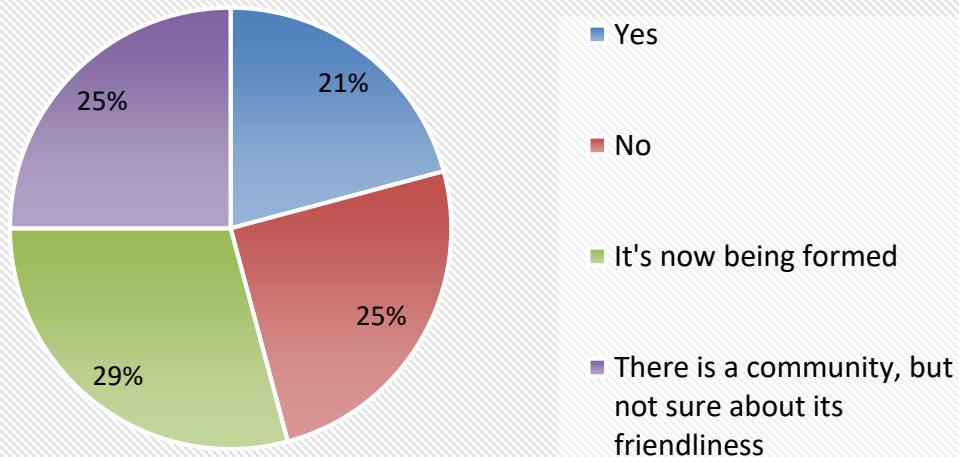
Speaking about entrepreneurial culture the opinions divided 50/50.

Figure 37. Is there an entrepreneurial culture in Ukraine?



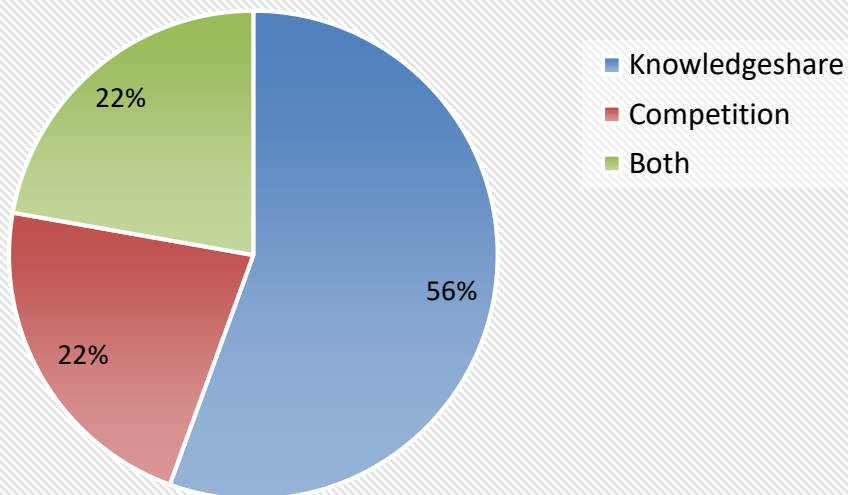
Interestingly, the opinions whether there is a friendly startup community in Ukraine are also varied showing that the system is rather unstable.

Figure 38. Can you say that there is a friendly startup community in Ukraine?



And again, the opinions of respondents regarding whether knowledge is exchanged in the environment or strong competition takes place have also divided.

Figure 39. Is there a knowledge share between the founders of like projects or is there tough competition?

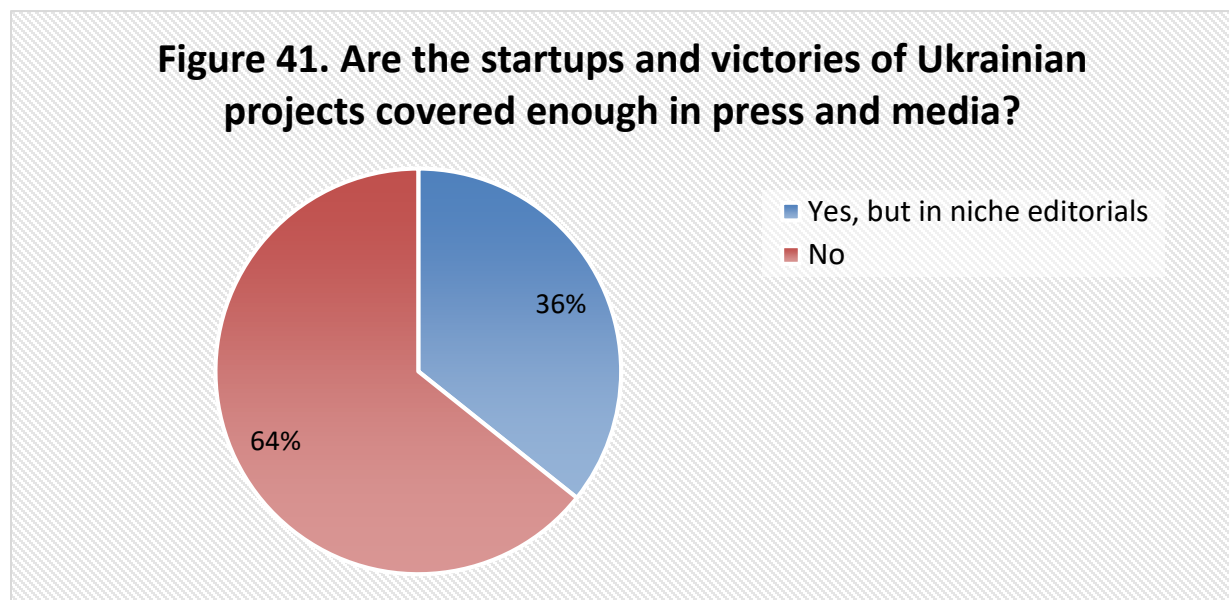


This speaks of the very vibrant environment which is still being settled and that the culture, where every person is for herself, is also changing, and there comes a remembrance that together startups can achieve more.

At the same time the majority of startup founders confirm that there are places where they can meet and talk to like-minded people which speaks about **the development of support infrastructure**.



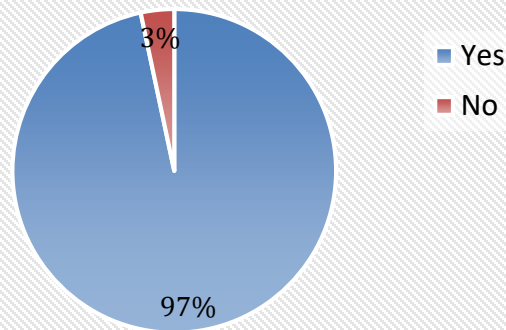
Though startup victories of Ukrainian projects are not covered enough in press and media, most of the startup founders do not care. In private conversations it was said that the less they are mentioned locally, the less attention they will get from certain structures, allowing them to work safely.



4.5 Relation of startup founders to Support ecosystem component

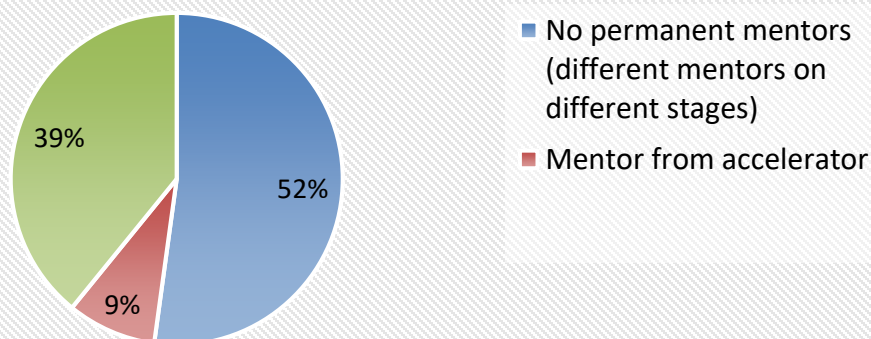
97% of startup founders as seen on figure 42 agree that proper accelerator and business hubs are necessary. Reflecting again on data on Figure 24, the programs of accelerator should be upgraded to match the demands of Ukrainian startups to market globally. Startup founders have mentioned that having been a part of Ukrainian accelerator they would then apply to European and US accelerators to get more international business experience as well as experience specifically in their niches, should that be AI or B2B or Fintech. **Ukrainian startups are not dependent on the Ukrainian accelerators.**

Figure 42. Do you think that accelerators and business hubs are necessary for Ukrainian startups?



Only a few teams pointed out that they had a mentor since the very start. Most of the teams had changing mentors over the lifecycle of their project. 39% of startups never had a mentor though some of them would love to have one. Several startup founders mentioned that the best expertise was received from foreign mentors in foreign accelerators who, unfortunately, could not support them after the end of the program.

Figure 43. Did you have a mentor and what was your experience?

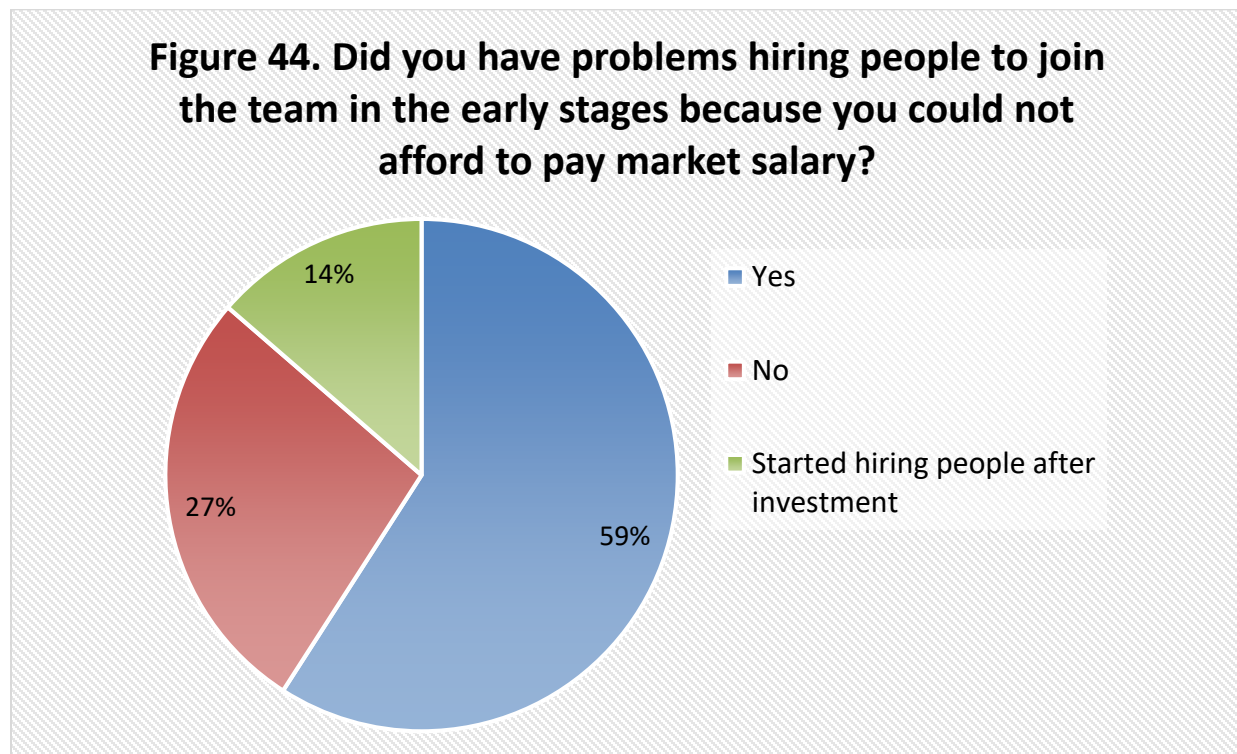


The conclusions that can be made out of the data is as following:

- The number of mentors in Ukraine is not comparable with the number of new startups, the **ecosystem needs more professionals**
- The **ecosystem lacks mentors with strong international expertise** to help companies achieve their goals

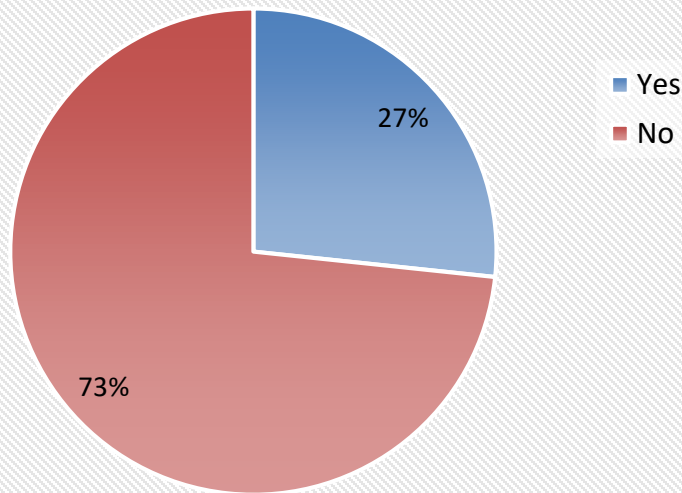
4.6 Relation of startup founders to Human Capital component

While there are many ICT specialists in Ukraine, the market prices are overheated by small and large outsourcing companies. The development of the product requires a wider skillset and knowledge than the development of the source code and such specialists are even more expensive. As Figure 44 suggests, 60% of startups had problems hiring people and 14% started hiring having received an investment only.



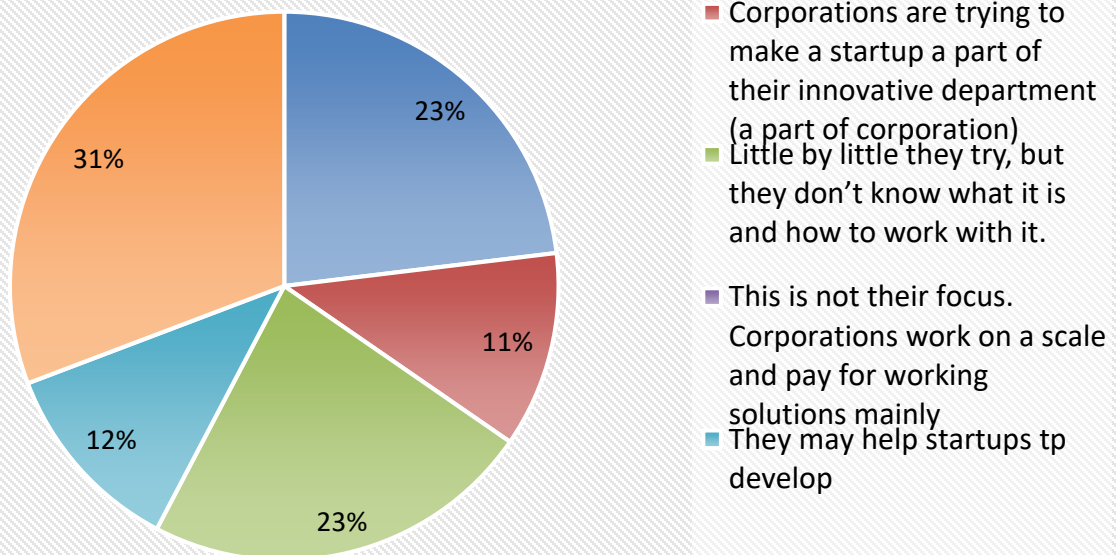
The majority of startup founders think that **there is no place in Ukraine that can prepare people for startup entrepreneurship**. This brings us back again to the question of acceleration programs and introducing more business schools.

Figure 45. Is there a place where startup entrepreneurs are prepared in Ukraine?



The role of the corporations is seen as developing. Startups do not trust corporations and those who already had some experience working with corporate sector list it rather than negative.

Figure 46. What do you think about the role of corporations in the development of innovative entrepreneurship in Ukraine?

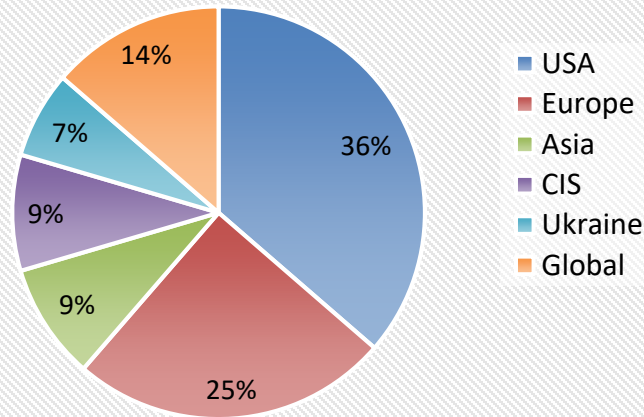


It is obvious that this direction has to be further developed and more trust and transparency should be built between stakeholders.

4.7 Relation of startup founders to Market component

I started this section by questioning startup founders what are their target markets.

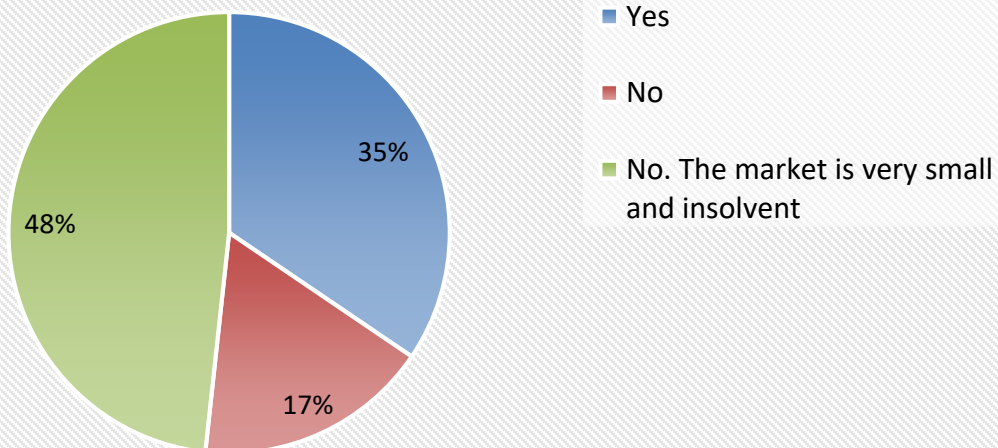
Figure 47: What are your main business markets?



As seen on Figure 47, only 7% of startups consider Ukraine as their main target market, with 36% of startups targeting USA and 25% targeting European Union. Thus, **Ukrainian startups are not dependent on Ukrainian market and economy and their peculiarities**. It should be mentioned that 48% of respondents have considered the Ukrainian market but decided not to proceed with it for the following reasons:

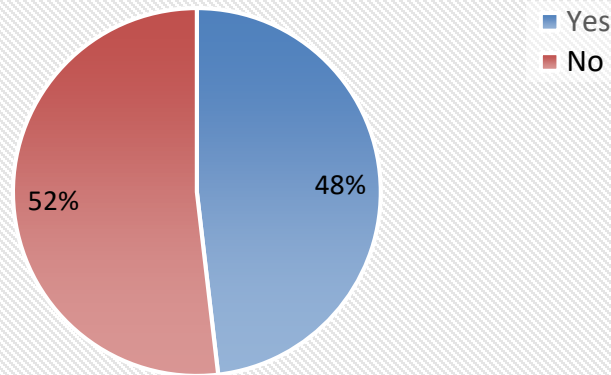
- Corruption. Ukrainian way of doing business is unpredictable
- The market is very small and insolvent
- This can only be a starting point for us, not the main market

Figure 48. Have you considered Ukraine as your main market?



With this, 52% of respondents do not mention the origin of their project in public.

Figure 49. Do you position yourself globally as a Ukrainian startup. If you do not, why?



66% of startups as seen on Figure 50 have registered business outside Ukraine. 64% have offices/representatives in the country of the target market. The reasoning behind this decision is:

- To ease legal and financial operations
- Placing a headquarters in a stable country makes the company look more reliable to customers
- It's extremely difficult to operate a business globally if it's registered as a Ukrainian company
- Because foreign investors will not invest in a company if it is not registered in a country with transparent legislation
- In Ukraine, there is no acceptable organizational form for a startup in IT

Figure 50. Is your business registered outside Ukraine?

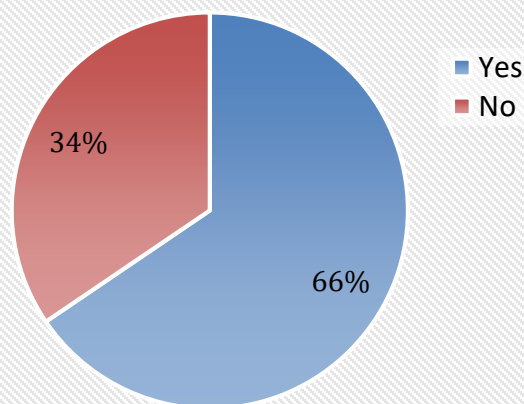
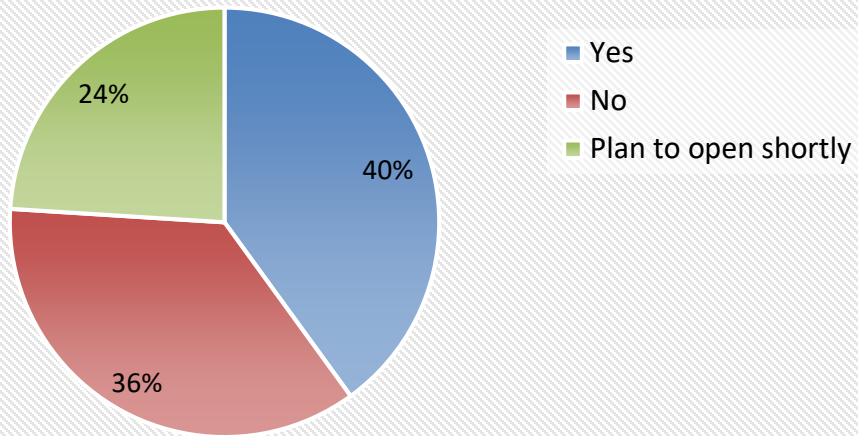
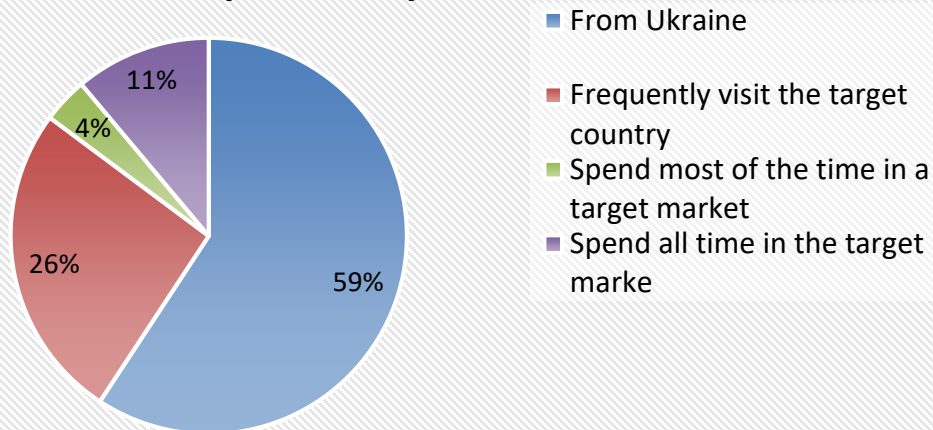


Figure 51. Do you have office/representatives in the country which is your main market (in case your main market is not Ukraine)



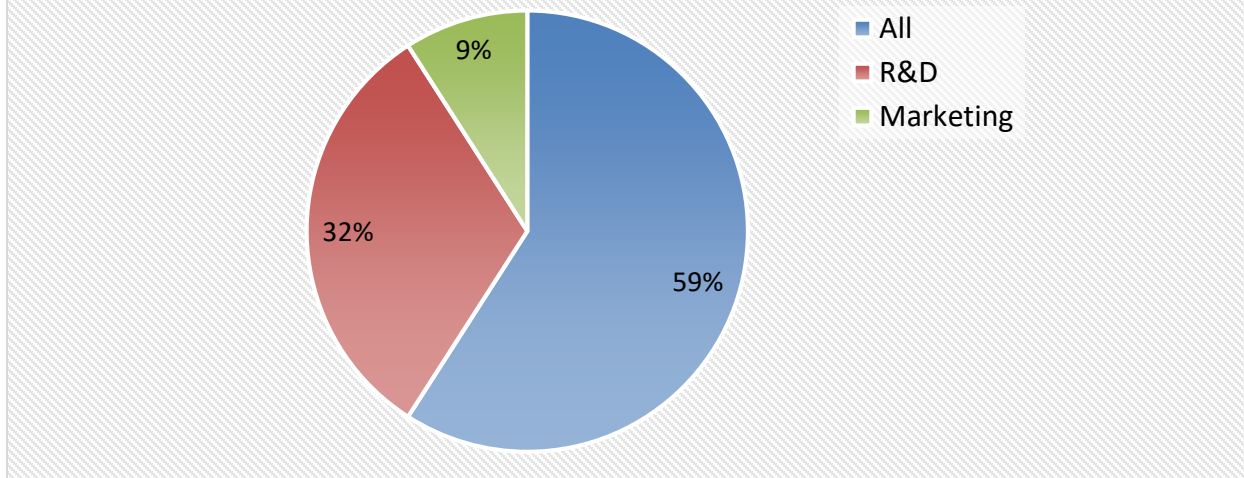
While 60% of owners still run business from Ukraine, other 40% frequently visit or spend all time in the country of target market.

Figure 52. Do you personally develop business from Ukraine or do you spend most of your time in the country which is your main market?



Increasing trends to have only R&D office in Ukraine are seen on Figure 53. 40% of startups are already optimizing processes to better meet the needs and expectations of foreign markets opening marketing and business development departments outside Ukraine.

Figure 53. Which departments of your company are located in Ukraine?



Summing up, **the startups feel that the Ukrainian market is small, insolvent, and is not interested in innovation/** They prefer working on a global scale gradually optimizing all their processes to support that vector.

4.8 Problems of IT startup ecosystem as seen by startups

Startup founders have emphasized the following differences between the Ukrainian startup ecosystem and the Western ones:

- Maternity, we can hardly call what we have an ecosystem yet
- We are different in every cornerstone: less successful stories, less experience, legislation maternity, money, networking, education, etc.
- Mentality of stakeholders and nations overall

According to startup founders responses, Ukrainian startup ecosystem lacks most:

- Transparency
- Experts with exits, IPO, multi-billion contracts that could share their experience
- Successful international case studies / field professionals
- Easy money access, easy setup of operations for fast start
- Investors
- Unity between startups, funds and accelerators. "We all work for a single goal, we need to properly unite and mutually cooperate" (cited from questionnaire)
- Investments on pre-seed and seed stages

- International business experience
- Business education, mentoring and fluent English
- Uplifting domestic economy and purchasing power
- Established financial system
- Loyal social and business environment

Being asked what trends have you seen in the Ukrainian startup ecosystem over the past few years, the following answers were received:

- More events, but do not see major changes
- Events and info-business. Startups, but not businesses
- Something is happening but very slowly
- Not sure

4.9 Conclusions from the survey

The startup survey has helped to identify the unique traits and peculiarities of Ukrainian startup projects. The observations from the startup survey are as following:

- 1) Ukrainian startups have mimicked to tough conditions of Ukrainian startup ecosystem and learned how to exist outside of the Ukrainian startup ecosystem**
- 2) Ukrainian startups try to minimize the effects of ecosystem on themselves and tackle any problems they face on their own**
- 3) Ukrainian startups are not dependent on Policy, Finances, Accelerators (Support Infrastructure), Culture and Market components of the ecosystem**
- 4) Ukrainian startups are still dependent (but not 100%) on Ukrainian Human Capital and have problems finding experienced mentors that could guide them all the way up.**
- 5) Referring to Ukrainian startup, we seem to be more referring to the origin of the founders rather than the country where the startup companies grow and developed.**

Startups do not expect any support from the state, whether that support takes the shape of funding or creating transparent business conditions, but rather register companies outside Ukraine to be able to run their businesses and grow. There is no local market, so startup businesses target countries with high purchasing power. There is a lack of local capital in the venture market, so they attract investment from foreign VC funds or international programs/grants. Having no strong mentors, Ukrainian startups are often left to learn for

themselves. Finding that local accelerators can provide only a part of the knowledge that they need, they go for European, American, or Asian accelerators. Having no access to state or corporate R&D centers, they find ways to develop products on their own. They are not concerned whether they got covered in media or not, they keep working hard to their goals. There is more competition in the industry than there is sharing and openness. Founders of Ukrainian startups are very strong players, but they are loner players not strongly connected with others in the community. And though all startup founders admit that state support, proper accelerators, and mentors with worldwide expertise are all important and would be nice to have locally, Ukrainian startups have learned to exist without them or learned to find them outside Ukraine.

5. Discussion, recommendations and conclusion

In the final chapter of my thesis I provide discussion over the results of literature review and empirical study as well as recommendations and conclusions based on all the data gathered

5.1 ‘Out of system’ startups – the threat for innovation

The fact that Ukrainian IT startups are developing mostly outside the Ukrainian startup, entrepreneurial and innovative ecosystems is a threat to the development of the Ukrainian state as a whole. Startups are the main drivers of progress, development, and as a result, the competitiveness of the country. If there are no innovative projects in the country aimed at the development of the domestic market, this will lead to the country becoming even less competitive. Taking into account the course of Ukraine on European integration, in the current state of affairs, we, as a country, will not be able to become a full-fledged part of the European community. Without innovation, industry and other sectors of the Ukrainian economy will gradually fall into a state of decline.

Registration of companies outside Ukraine leads to taxes paid outside Ukraine as well, benefitting countries other than Ukraine. This creates a big challenge for the state of Ukraine that should take a vector on bringing money and talent back into the country.

In order to keep talent in Ukraine and for all ecosystem stakeholders to benefit, the complete ecosystem revamp has to take place. Business competences should be developed inside Ukraine. The state should support innovators financially and socially. Investors should initiate a

more open dialogue with startup founders. The higher education programs require an update to support and foster innovation, academic entrepreneurship should become an inseparable part of the education. Corporate sector should rely more on open innovation and start a conversation where they require help to change.

At the same time, startups should be focused on innovation and should raise decent projects with high potential that are worth investing. They should develop their own knowledge and business expertise to be able to develop a company from a startup to highly profitable entity. They should understand how business works and should be capable of having a proper dialogue with investors and the market.

The system can be developed only when there is an exchange of information and experience (Dev.by media 2016). Only by means of starting an open fair dialogue and uniting efforts of all stakeholders it becomes possible to push the system into the right direction.

5.2 Recommendations

Based on the literature review and the findings from the survey, the following recommendations can be provided to develop more opportunities and strengthen the startup ecosystem of Ukraine.

5.2.1 Policy

1. Demonstrate effective anti-corruption efforts (including prosecuting high-level officials for corruption)
2. Take visible steps to separate politics and business interests
3. Government should set transparent rules in public-private collaboration and provide strategic views on innovation ecosystem, bringing different stakeholders groups together.
4. Create a regulatory framework on which an innovation ecosystem can be based on
5. Public commitment towards innovation should be followed by a large initial financial investment with “smart spending”. The local analogue of the Horizon2020 program could be a good example
6. International cooperation. Learning from the experience of countries that have high competence in the formation and development of technologies, as well as transparent legislation

7. Foreign expertise, influence, and resources should build on existing capacities
8. Creation of a state initiative to attract foreign venture capital by providing tax incentives and the prospect of doubling any joint investment. The Yozma project in Israel (The Yozma Group n.d.) is a great example of the success of such activities.
9. It is important to attract the venture funds of IT giants (Intel, HP, Apple, Microsoft, Sony, Cisco, etc) and negotiate the opening of their branches in Ukraine as they are interested in buying startups and their R&D centers can serve as additional pillars for innovation
10. Development of the special economic zone for IT projects and startups. A good example might be Belarus, where there is a 9 percent income tax for employees of companies of the national High-Tech Park (HTP Belarus n.d), or Romania, where IT specialists are exempted from paying income tax (Accace 2019).
11. Development of transparent business schemes to attract foreign investors both within the company and in the state as a whole.

5.2.2 Finance

- Development of local crowdfunding platforms
- Smart state funding for startups on pre-seed stages
- Business angels should identify themselves so startups know who they can contact in the early stages
- Further development of innovation activities within corporations, where startups could use corporate facilities, R&D, expertise and financial help for further development
- Since venture funds stimulate startups to look at international markets, the state should develop funding capabilities for startups looking at the Ukrainian market only as this may highly increase the chances of more companies developing and contributing to the local market
- Collaborate on establishing more open relationships between investors and startup founders, making the game rules clear to both stakeholders
- Foreign investors present strong competition to local investors. Local investors have to accept the business rules of foreign investors to be able to play equally

5.2.3 Culture

- Promotion of entrepreneurial culture
- More attention paid by the media to the topic of startups, including news websites, radio interviews, and TV

- Develop some state awards to make startups feel appreciated in their own country and, as a result, further assist in their development
- Take a state course on the development of competitiveness between Ukrainian enterprises
- Moving from postsoviet relics to European Integration and culture
- Work with startups to offer summer internships to high school and university students in order for kids to reflect on their future job possibilities

5.2.4 Support Infrastructure

- Experts and field professionals with exits, IPO, and multi-billion contracts who could share their experience should be invited to meetups, events, conferences, and mentoring sessions are needed. They can be invited by state venture capitalists, or business hubs/accelerators
- Invite experts to develop acceleration programs that can compete with foreign education and introduce international business experience to Ukrainian startups
- Development of niche acceleration programs, i.e. fintech, edutech, adtech, B2B, AI, etc
- More programs for business education should be developed
- All support infrastructure system stakeholders need to properly unite and mutually cooperate
- Means for easy setup of operations for fast start should be developed
- More openness is needed inside the startup community. Sharing and healthy competition is the way forward to system and participant growth.

5.2.5 Human Capital

- Additional support for startup employees from the state
- Promote innovation in universities and stimulate students to start working on their projects
- Invite international marketing managers for masterclasses and events to leverage local marketing experiences
- Align university programs with recent knowledge
- Ukraine has got the people, knowledge, resources and passion it needs to make incredible progress towards developing a fertile Academic Entrepreneurship eco-system – but institutions and people must join forces (BE Berlin Economics GmbH 2015).

- Connect science and business
- Develop programs with smart funding where every resident of the country could apply with his or her project

5.2.6 Markets

- A shift needs to take place from outsourcing to product development
- An uplift in the domestic economy and increase in purchasing power is vital
- Educating people that technology and innovative projects can change their lives for the better and that there are more efficient ways to do things than the methods used by their grandparents. This should be part of the state's educational policy.

5.3 Overview and Conclusions

After analyzing literature on the topic, interviewing various startup founders, and talking to an assortment of market players, we can conclude that the Ukrainian startup ecosystem is quite unique.

First, it is completely obvious that the state plays a minimal role in this system. Venture market players and mature, large IT market players unite in associations to have at least a minimal opportunity to influence the legislative base, developing proposals for new bills that focus on the development and growth of the IT industry. Throughout this entire process, the state plays a rather passive role.

Corruption and bureaucracy are highly developed throughout the state apparatus, which, in general, drastically reduces any possible development opportunities in the country. There are no transparent business schemes that foreign investors would be willing to invest in. It can be said that Ukraine is the only country, where the development of the system takes place from the bottom up. As a result, 90% of start-up companies register a business in another jurisdiction or leave the country.

The rest of the IT ecosystem elements are at the development stage. The culture of an IT start-up is fairly underdeveloped. It is not promoted among young people or among the older generation with significant work experience. This is a part of the post-Soviet legacy and a culture grafted by communism. We can only rejoice in the fact that the younger generation of

entrepreneurs has been brought up in a different environment, but their problem is lack of experience.

The educational base for the creation and maintenance of IT business is also in the development process. Accelerators, incubators, and business hubs open and disappear. One can essentially get some basic knowledge, but for further education one usually needs to visit specialized accelerators in other countries where one can learn both the specifics of the direction and the specifics of working in a particular market.

Mentoring support is rather weak. Many startups do not have mentors, or they change so quickly that the proper attention is not being paid to the project. There is a shortage of strong market participants, with stories of large exhibitionists, the development of large projects, and the solution of complex non-standard problems.

Despite the fact that almost all startups are trying to immediately enter either the USA or European markets, they lack international business expertise and experience. Ukrainian accelerators should take into account these specifics and develop programs aimed at working in foreign markets. Startups lack the ability to quickly start. Accelerators, incubators, and business hubs should also take this need into account when developing the services provided.

The corporate sector still has little to do with startups and innovations. While connections between the corporate segment with startups has started taking place, there is no real interaction. Corporations are trying to work according to old schemes, which essentially consist solely of trying to make a startup a part of their corporation.

Both b2c and b2b markets in Ukraine are not developed enough to have a place for startups and innovations. The majority of businesses and most of the population are insolvent, which forces startups to develop their products in other countries. While Ukraine is known for its strong programmers, they are being used as intellectual raw material. In Ukraine, they write code, while products are often built outside the country. The average monthly salary is around \$370, which makes it impossible for ordinary people to accumulate capital for starting a business. The country is technologically underdeveloped.

The interaction between startups is rather weak. Despite the fact that startup founders attend specialized events, a full exchange of experience occurs very rarely, which leads to the locking of the entire community system as a whole.

Startups exist out of the system. That is the reason why in a weak country like Ukraine it became possible to create strong projects that are known as Ukrainian in the world arena. At the same time, these projects have offices in multiple countries of the world, including Ukraine, where there remains some development and where it is cheaper to employ people. These projects have long been registered abroad and do not bring money to Ukraine. The only thing that is “Ukrainian” is the nationality of the founders.

Ukraine is full of talented people, but they often have to leave the country in order to be able to build a business, grow, and earn money or stay in shade in Ukraine. The biggest step in Ukraine needs to be taken by the state, primarily in the legislative and tax areas. If these changes happen, Ukraine can become a new silicon valley, launching hundreds of startups every year.

I do hope that this review of the ecosystem will be useful to all members of the ecosystem as a guide to the actions that needs to be taken.

I consider the questions indicated in this thesis as thoroughly addressed. I also admit that the sample of startups participating in the survey might be not enough to get a fully unbiased view on the ecosystem. Thus, further steps may be to conduct a larger study involving more startups. The ideal situation would be if this study were to be conducted by a major international media with the participation of significant opinion leaders.

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Appendix A – The startups questionnaire

General project information
How old is your project?
How many people do you have in your team?
What is the total amount of investment you raised?
Which percentage from Ukrainian investors?
Do you position yourself globally as a Ukrainian startup. If you do not, why?
Do you have office/representatives in the country which is your main market (in case your main market is not Ukraine)
Which departments of your company are located in Ukraine?
Do you personally develop business from Ukraine or do you spend most of your time in the country that is your main market?
What was most complicated for you (at any stage of your business development)?
What helped you grow?
In your opinion, what is the difference between a startup and small/medium entrepreneurship?
Have you already reached the breakeven point?
Your startup knowledge set and first steps
How did you come up with the startup idea? What made you think about starting a startup?
How did you handle the uncertainty and challenges of switching to a startup?
How many people founded the project?
Was it easy for you to find cofounders/partners for the startup?
Which competencies did every founder have?
How much money did you have at the start and what was the source of that money?
Did you have an understanding how to start working on the project/idea?
When did you get the feeling that now you know exactly what needs to be done?
Where did you receive the initial knowledge to start working on your project?
Have you been a part of the Ukrainian accelerator/ business hub?
Have you visited Ukrainian meetups with investors or startup battles? Where did you get acquainted with people from the Ukrainian startup ecosystem?
Did you hope to get any help from the state (financial or informational) and have you contacted state or local authorities in regards to receiving help for your startup?
Did you have a mentor from the very start? Did you have a mentor overall and at which point did you start working with him/her?
Did you have problems hiring people to join the team in the early stages because you could not afford to pay market salary?

Do you have a specialized business education?
What's the goal of running your startup? To sell it later or do you completely enjoy the process of being the owner and founder?
Can one name you a serial entrepreneur?
Markets
Have you considered Ukraine as your main market? If not, why?
What are your main business markets?
Is your business registered in Ukraine? If not, why?
Getting investments
Have you been searching for investors in Ukraine?
What was your experience in getting investors overall?
Which problems and challenges did you face speaking to an investor?
Did you have anyone who taught you how to prepare business plan/presentation for investors, how to approach them, what pay attention to?
Your investor has helped you solely with money or helped you with connections and took the mentoring role as well?
Ukrainian Startup Community
Can you say that there is a friendly startup community in Ukraine?
Are there places/meetups in Ukraine, where you can speak with like-minded people?
Is there a knowledge share between the founders of like projects or is there tough competition?
Ukrainian society and startups
Are the startups and victories of Ukrainian projects covered enough in press and media?
Is there a culture in Ukraine where failure is OK, or if there were failures, then you are already on a bad account with an investor?
Your view on startup ecosystem
Is there an entrepreneurial culture in Ukraine?
Is there a place where startup entrepreneurs are prepared in Ukraine?
Do you think that in Ukraine there is a problem with funding for startups?
How do you assess the role of the state (importance) personally for your project and for the startup ecosystem as a whole?
What do you think about the role of corporations in the development of innovative entrepreneurship in Ukraine?
Do you think that accelerators and conference hubs are necessary for Ukrainian startups?
What is the difference between the Ukrainian startup ecosystem and the western ones?
What do you think the Ukrainian start-up ecosystem lacks most?