

Mapping Start-up Businesses and Analyzing the Perspectives of Establishing a Greek Healthcare Start-up Company

Efstathios Kaloulis¹, Dimitrios Zarakovitis¹ and Athina Lazakidou¹

Abstract

Entrepreneurship seems to be taking strong action with ambitious researchers who dare to undertake professional initiatives for the treatment of diseases, such as cancer, and any kind of problems patients address today. After the analysis of the basic elements regarding the development of start-up businesses, current trends in healthcare are categorised and cases are in turn studied. The breakthroughs developed in healthcare primarily regard technologies such as Artificial Intelligence, Neuroscience Technology and Biotechnology, while Digital Health gains ground applied by several start-up businesses worldwide. By surveying their data, useful conclusions are drawn concerning the investment process of healthcare start-up businesses. In the attempt of analysing the perspectives of establishing such companies in Greece, the Greek healthcare start-ups are presented. Through an empirical study at the Greek companies, Greek reality is thus documented and data are presented in a plot. The purpose of this paper is to analyse the perspectives of establishing a Greek healthcare start-up company. The survey includes the significant components of attracting potential investors and offers evidence-based to healthcare funding. It also summarizes on the fundamental principles of forming a start-up company that mainly concerns health sector.

Keywords: Healthcare, Biotechnology, Digital Health, Innovation, Entrepreneurship, Start-up Companies, Geographical Information Systems, Mapping.

¹ University of Peloponnese, Department of Economics, Greece

1 Introduction

The role of start-up companies in modern societies is really challenging and important at the same time [1], [2]. Based on the vision of their founder, companies are supposed to take the risk of creating a product or service relatively innovative and completely different from the existing ones [3-6].

On most occasions, these business ventures are shipwrecked and everything goes up in smoke, but there is a considerable number of start-ups that have succeeded and prevailed with great success [7-10]. Such start-ups were Google, Paypal, Amazon, and other behemoths of the international business world [11-14]. A small start-up can take a big risk and face a lot of barriers, but vision and innovation can make a business succeed and change the so far established norms through its activity.

As a logical consequence of the new technologies being developed and continuously changing our reality, more and more people are trying to do something new and innovative. The knowledge they have gained through their fields of study and their previous business experience is another component for the next success. Interest lies not only with the founders, but there are also many investors who can be successful entrepreneurs, who, based on their capital, aim to invest in other start-ups as Angel Investors or through Venture Capital funds [15-18].

The most difficult part for an entrepreneur and a start-up is funding [19-21]. It is quite a major obstacle because most of the time founders are new in the field and may not acquire the knowledge and the funds they need to get their business to its final form.

In order to overcome these obstacles that arise, there are enough structures to support young people and encourage them to improve their ideas, create groups and dare to develop them. Various business acceleration programs are carried out quite at regular intervals. They last several months and provide support to teams in different fields [22-23]. Depending on the dynamics of the team and the maturity of the study, they can be integrated, grow rapidly and attract investors to receive some funding

2 Material and Method

An empirical research was performed with the use of a questionnaire for 34 Greek start-ups, either headquartered in Greece or abroad. The questionnaires were created online through Google forms and sent electronically via e-mail as well as

social networks and business pages of the parties concerned. The research was conducted in the last six months and contacts were made with business mentors as well as entrepreneurs, such as co-working spaces and accelerators. In addition, open call was made to any interested person-founder in online entrepreneurship groups. The questionnaire consists of 41 qualitative and quantitative questions. Moreover, ArcGIS software as well as Zeemaps.com free online platform are used to map the results. An analysis of the data collected from the companies was performed with dashboards of Visualizefree.com, free visualization software.

3 Results

The responses received from 34 businesses demonstrate rather important facts about the current situation in Greece and it is worth mentioning that most of the questions were answered by almost all respondents. The main results are as follows:

As far as the year of establishment is concerned, the responses received by the 33 companies are for the year 2012, with one exception established in 2005. It is worth to be noted that the majority of them were set up in 2017 at a rate of 27.3%. 2016 follows with a foundation rate of 21.2%, while at a rate of 15.2% come 2014 and 2015. However, at rates less than 10% are the other years, such as 2018. During the last year there is no significant increase according to the answers to the questionnaire, the establishment of new companies is remarkable in recent years though.

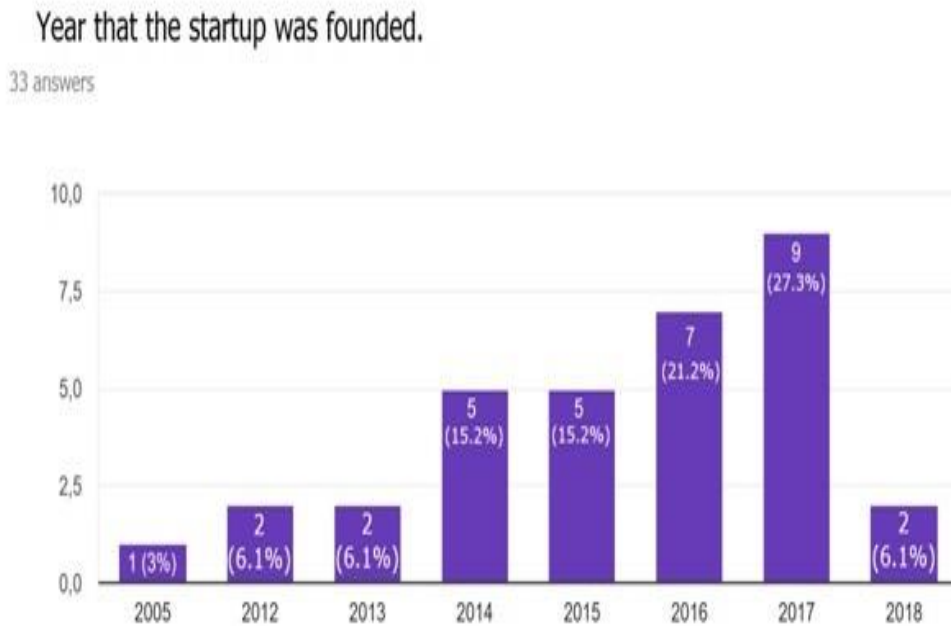


Figure 1: Statistical results of the year the start-up was founded

The next question regards the incentive of establishment for the start-up businesses. 34 responses were received, of which the highest rate (85.3%) stated that they wanted to exploit an idea. The second highest rate (64.7%) said they found a gap in the market and so wanted to promote their own innovative idea. Then 20.6% indicated that they wanted to realize their idea in order to earn some income and have a job, while 14.7% agreed that they did it for livelihood in order to improve their economic situation. Therefore, most of the founders begin to establish a start-up company with main goal the implementation of an idea to offer to society and fewer dare it for purely livelihood reasons.

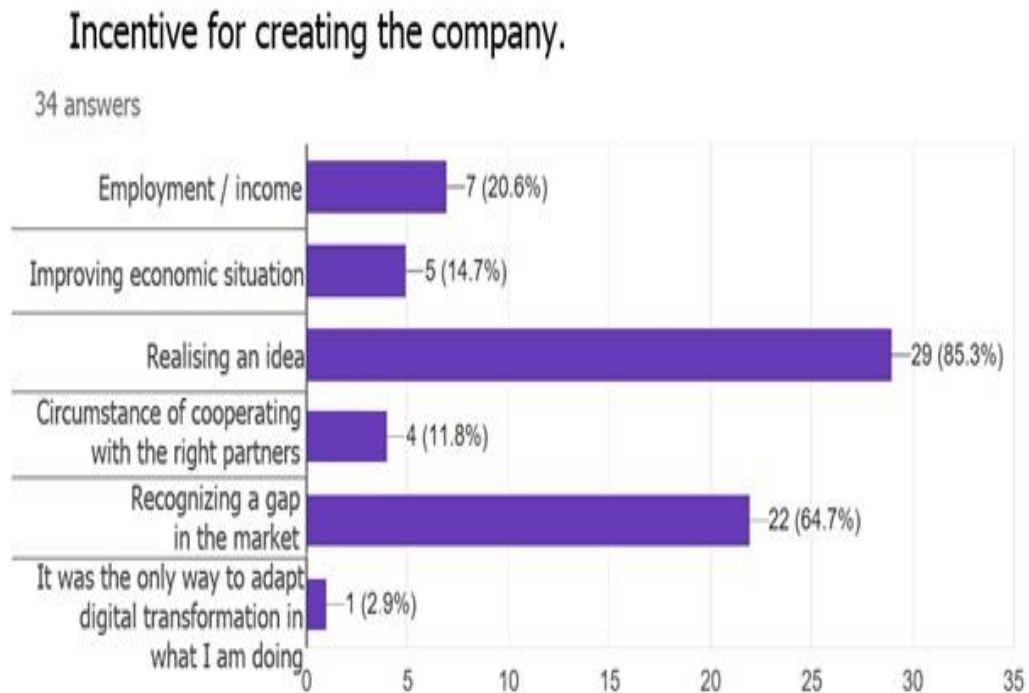


Figure 2: Statistical results of the incentive for creating the company

According to the 34 responses given about the start-up ownership pattern, the majority (76.5%) seem to have worked with other people to set up the company. Only 23.5% said they did not make any kind of cooperation and are the sole proprietors of the company.

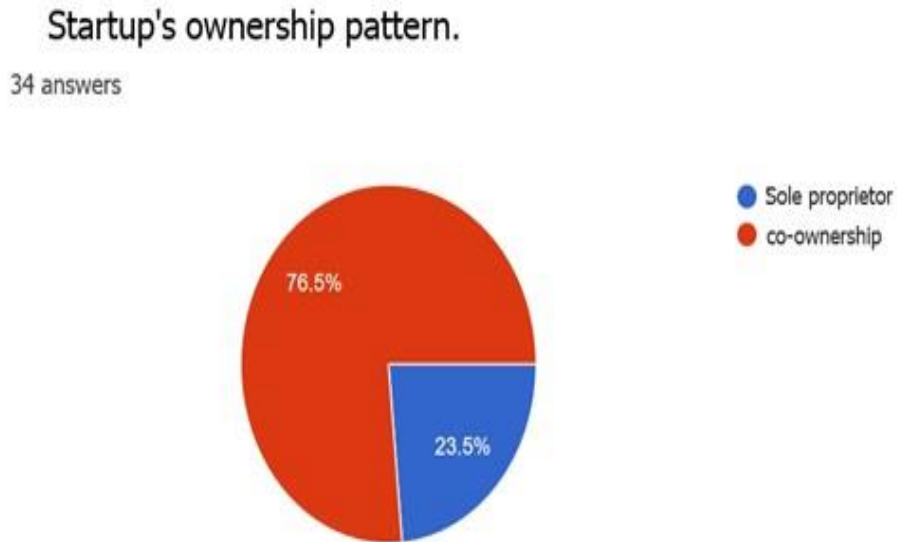


Figure 3: Statistical results of start-up's ownership pattern

As for the question about the legal form of the company, the total of 50% set up a private capital company (IKE), which is a new form of company and has no asset freezing. The total of 17.6% have an individual business, while 11.8% are Societe Anonyme (SA). Therefore, through the responses of the 34 companies, it appears that the founders of the start-ups forming a company themselves establish an individual company and do not prefer to make a single-person company such as a Limited Liability Company (LLC).

Legal form of company.

34 answers



Figure 4: Statistical results of legal form of company

The next question made was about the current state of the start-up companies. At this point it was found out that 76.5% have not completed the development of the company and the product and therefore they are still evolving. 14.7% say they have successfully survived, while the remaining 5.9% and 2.9% are either those who say they are in a difficult situation or that they will certainly not survive.

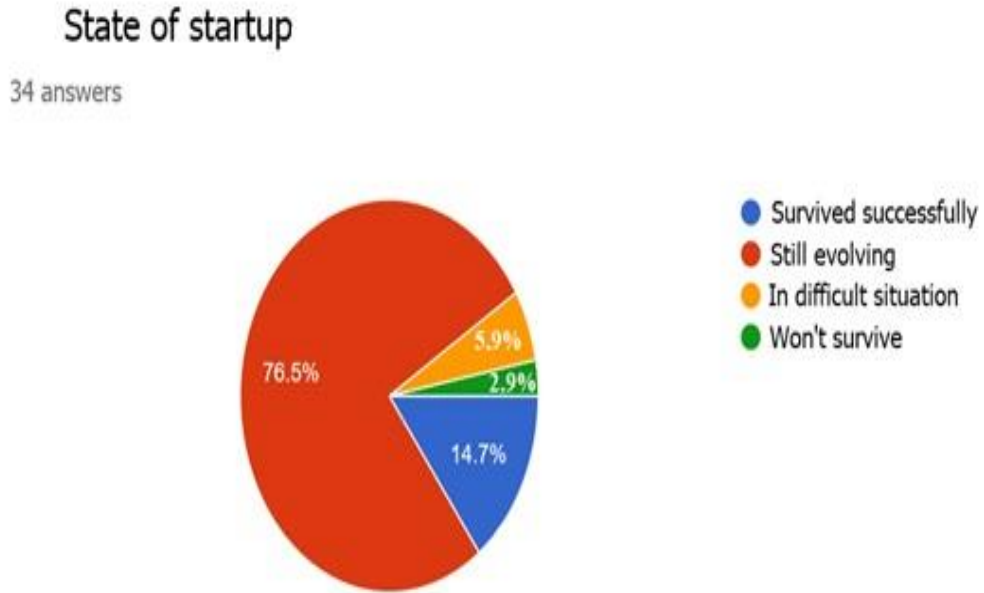


Figure 5: Statistical results of start-up's state

About the background of the founding members and their possible experience in start-up businesses, 61.8% said that they had never dealt with start-ups before, while only 38.2% stated they had a previous experience therein. All companies responded to this question.

Background of founding members. Do they have previous experience with startup companies?

34 answers

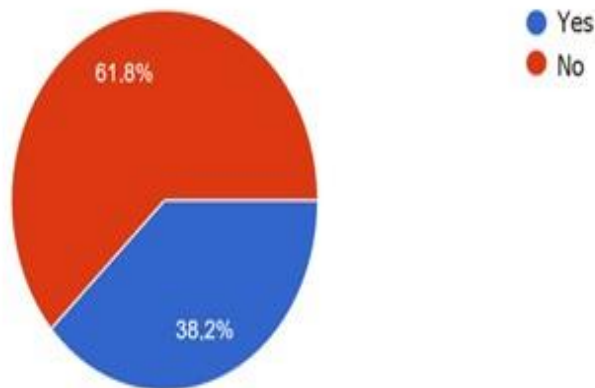


Figure 6: Statistical results of the background of founding members

In the matter of the educational attainment of the founders, all the companies gave response in order to form the final result. The majority of founders point out that by 55.9% they hold a Master's degree while 29.4% have received a Bachelor's degree. PhD holders are only 20%. The other rates of secondary school graduates and graduates of compulsory education are quite low. However, most of them have gained significant and educational expertise.

Level of Educational Attainment of founding members.

34 answers

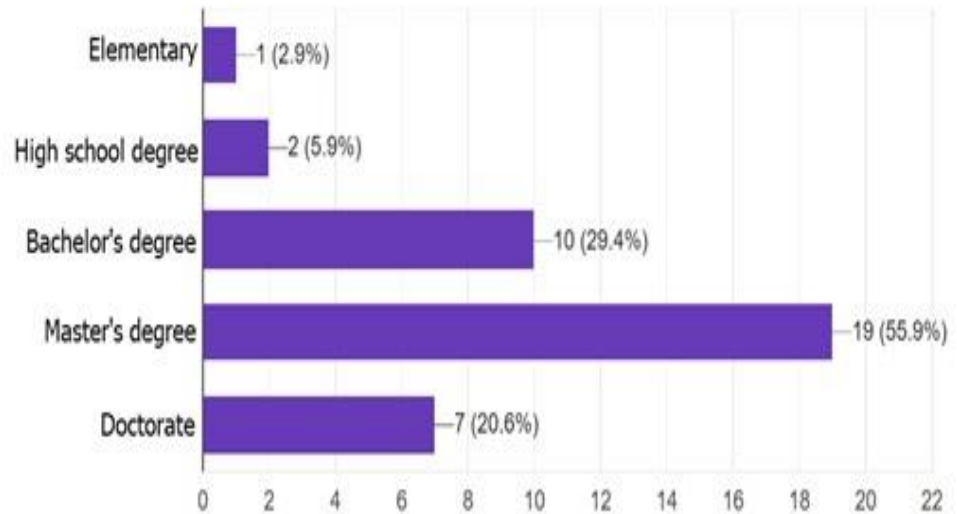


Figure 7: Statistical results of educational level of founding members

In the main start-up market, 55.9% regard global activity, followed by 29.4% orientated in the European market. Only 8.8% are engaged in the domestic market, while there is a 2.9% targeting the US market and another 2.9% the local market. It is concluded that it has prevailed for the Greek founders the view that they should engage in services that improve the quality of life of a wide range of people. Answers also in this case were provided by the thirty-four companies.

Main target market.

34 answers

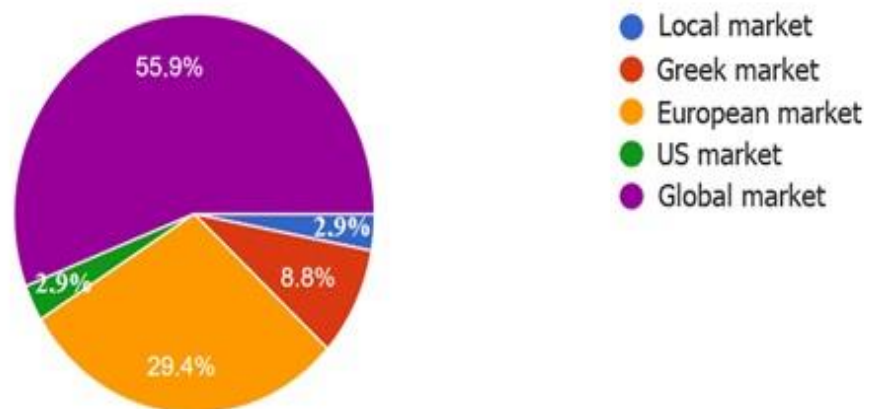


Figure 8: Statistical results of main target market

The use of external consultants or other support mechanisms in the research and development process of products or services of the start-ups for all companies, 70.6% stated that they used some consultants, such as mentors and other specialists, in order to form their own business. Only 29.4% said they did not use any external consultant or support mechanism. It is actually obvious that companies expecting to enter the global and leave the local market use the available mechanisms, such as consultants, in order to promptly achieve their goal.

Did you use external consultants or other support mechanisms in the research and development process of your company's products / services?

34 answers

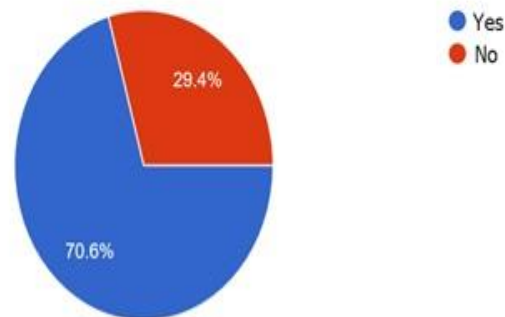


Figure 9: Statistical results of external consultants

Thirty out of the thirty-four companies responded to the question about the use of business incubation mechanisms or other start-up support mechanisms. Most appealed to a business incubator at a rate reaching 53.3%, while 46.7% turned to accelerators. 26.7% however, turned to the university, while co-working space seems to have received 20%. The actions taken place over the last years with accelerators and business incubators have greatly supported young entrepreneurs as they mainly use them.

Use of business incubation mechanisms or other support mechanisms of startup companies.

30 answers

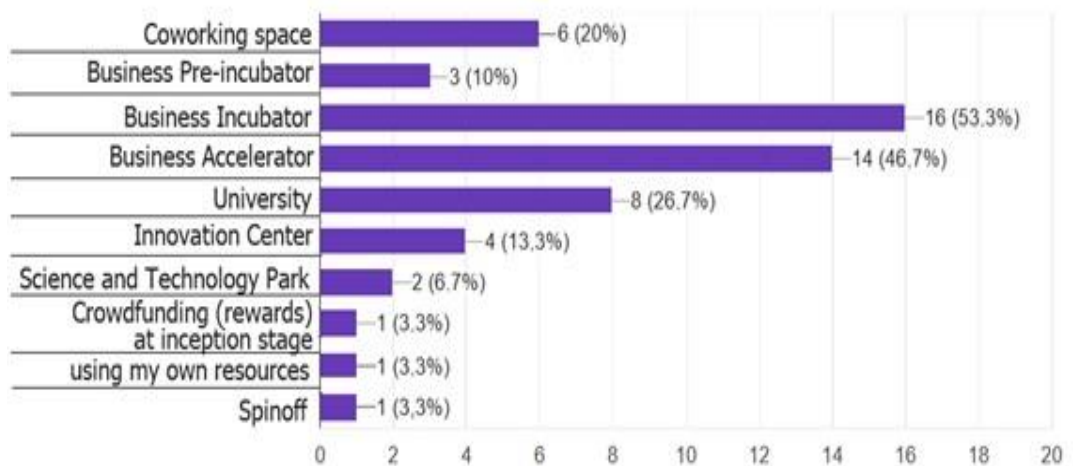


Figure 10: Statistical results of support mechanisms

Regarding the years to achieve the breakeven point, from the 32 answers received a frequency table was formed with each year comprises one class interval. Therefore, most stated that up to 2 years are required to reach the breakeven point at a rate of 59.37%, based on the sum of the two class intervals. 40.62% estimated this period to be 1 to 2 years and 25% to be 2 to 3 years in order to reach the breakeven point. Greek start-ups may encounter difficulties but are rewarded relatively early since they mainly start being profitable after the second year. A good business plan, hence, and a qualified team can directly lead to profits.

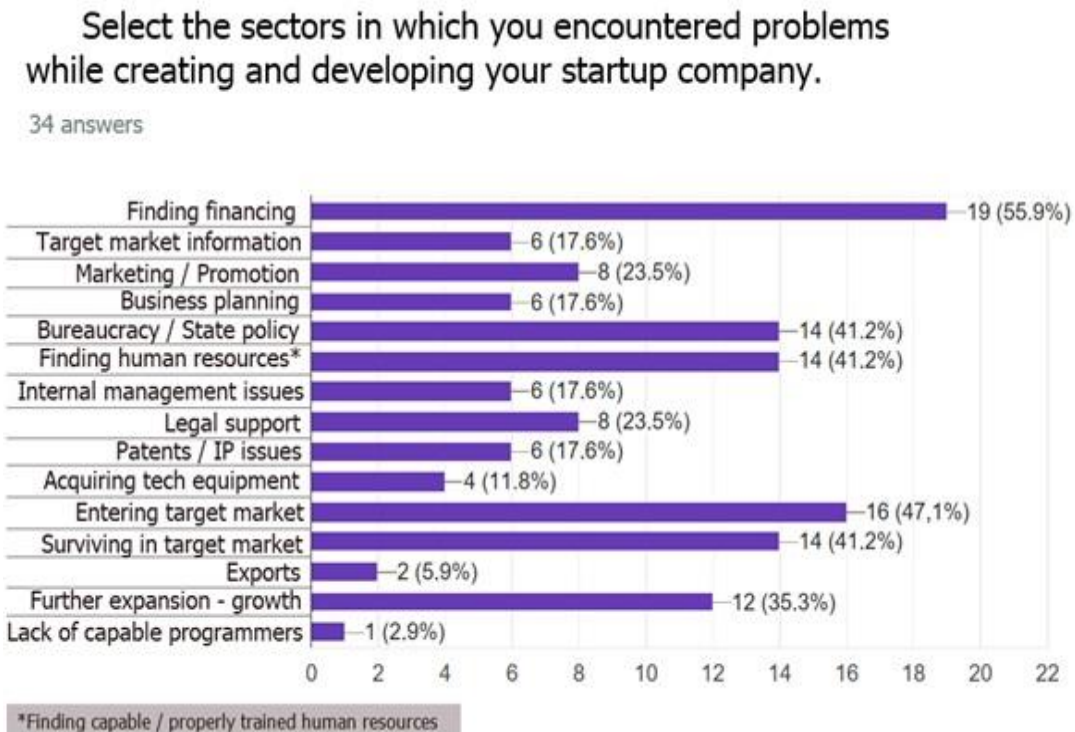


Figure 11: Statistical results of the problems encountered in the survey

4 Conclusions

Innovations developed on a daily basis are of utmost importance and significant changes will take place in years to come, with the improvement of quality of daily life and the longevity of the residents of this planet being the steady point of reference and gravity. New scientists have special sensibilities towards this direction, which is actually proved through nuclei formed by investors and other enthusiastic supporters. Vision is in the forefront and all cooperate in harmony to achieve the plans for the future of mankind.

The thorough analysis of the data about the most important start-up companies and the subsequent plot distinguish three global centers where innovations in healthcare sector are concentrated. The biggest is located in the US with California as the main pillar followed by Massachusetts. Then come London as European center of development and innovation and China. In these areas are concentrated most of the available capitals to be invested. The large return on

investment capital and the constant investments have turned the aforementioned areas into global centers of new technologies and start-up companies.

As far as the Greek reality is concerned, start-up companies demonstrate a high level of expertise and their personnel is quite qualified, but normally a bigger number of experts are required to support the evolving innovations. Healthcare is a sector that requires specialization and there are thus several examples of successful companies. The target market for Greek start-ups is not limited only within the borders of Greece; the lack of support and funds though makes their development rather hard. Several Greek founders have transferred their businesses abroad, in one of the pillars of new technologies. Some of them are in the United States and others in the United Kingdom. This fact occurs either due to funding received by these areas or to avoid high taxation and to achieve a better positioning in the target market. Equity capitals are mainly used while crucial are also European funds when available. The increased demand in capital and the reluctance of investment funds to proceed to investments hinder Greek start-ups' progress.

Support structures of entrepreneurship have been enhanced over the last years and have come to fruition, while a lot of information is available. The issues around the organization and support of new services and products have been resolved to a great extent and it is logical that small business groups subsequently make great progress. The challenge today is detected in funding and economic policy.

The support of start-up companies demands a change in state policy as a whole and a larger concentration of expertise in the country. In order to attract expertise in Greece, its comparative advantages, such as climate and quality of life, should be exploited. A great solution would be big companies to come to Greece from abroad and create research and development teams. Through this action experts are attracted and the field of innovation further evolves. The objective is the country to be supported by scientists from abroad engaged in Greece and thus the phenomenon of experts going abroad to be reversed. Among the other advantages, there is the possibility that big companies come in contact with start-ups and support them financially.

Acknowledgements: The authors have no funding or conflicts of interest to disclose.

References

- [1] Klotins, E., Unterkalmsteiner, M., &Gorschek, T. (2015, June). Software engineering knowledge areas in start-up companies: a mapping study. In *International Conference of Software Business*(pp. 245-257). Springer, Cham.Available at: https://link.springer.com/chapter/10.1007/978-3-319-19593-3_22.
- [2] Salamzadeh, A., & Kawamorita Kesim, H. (2017). The enterprising communities and start-up ecosystem in Iran. *Journal of Enterprising Communities: People and Places in the Global Economy*, 11(4), 456-479. Available at: <https://www.emeraldinsight.com/doi/abs/10.1108/JEC-07-2015-0036>.
- [3] Acs, Z. J., Szerb, L., & Lloyd, A. (2017). The global entrepreneurship and development index. In *Global Entrepreneurship and Development Index 2017* (pp. 29-53). Springer, Cham. Available at: https://link.springer.com/chapter/10.1007/978-3-319-65903-9_3.
- [4] Gonzalez, G. (2017). Risk Analysis for Initial Needs (RAIN): Im-proving a Time Zero Start-up Plan through Resource Based Auditing (RBA) and a Launch Focused Strategy. *Risk Analysis*, 1(8). Available at: <http://pubs.mumabusinessreview.org/2017/MBR-2017-081-095-Gonzalez-RAIN.pdf>.
- [5] Ladd, T., & Kendall, L. (2017). Resolving the Risk Paradox: Entrepreneurial Cognition in the Lean Start-up Method. *The Journal of Applied Business and Economics*, 19(11/12), 28-42. Available at: <http://search.proquest.com/openview/2b6578f09c541a4cfa699550cd1c711c/1?pq-origsite=gscholar&cbl=38282>.
- [6] Gonzalez, G. (2017). Start-up Business Plans: Academic Researchers and Expert Practitioners Still Disagree?. *Muma Business Review*. Available at: <http://pubs.mumabusinessreview.org/2017/MBR-2017-189-197-Gonzalez-Start-upPlans.pdf>.
- [7] Triebel, C., Schikora, C., Graske, R., &Sopper, S. (2018). Failure in Start-up Companies: Why Failure Is a Part of Founding. In *Strategies in Failure Management* (pp. 121-140). Springer, Cham. Available at: https://link.springer.com/chapter/10.1007/978-3-319-72757-8_9.
- [8] Gerpott, F. H., &Kieser, A. (2017). It's not charisma that makes extraordinarily successful entrepreneurs, but extraordinary success that makes entrepreneurs charismatic. *Managementforschung*, 27(1), 147-166. Available at: <https://link.springer.com/article/10.1365/s41113-017-0013-8>.
- [9] Cohen, M. S. (2017). Enhancing surgical innovation through a specialized medical school pathway of excellence in innovation and entrepreneurship: Lessons learned and opportunities for the future. *Surgery*, 162(5), 989-993.

- Available at:
<https://www.sciencedirect.com/science/article/pii/S0039606017304312>.
- [10] Ries, E. (2017). *The Start-up Way: How Modern Companies Use Entrepreneurial Management to Transform Culture and Drive Long-term Growth*. Currency.
- [11] Ester, P., & Maas, A. (2016). *Silicon Valley, Planet Start-up: Disruptive Innovation, Passionate Entrepreneurship and Hightech Start-ups*. Amsterdam University Press.
- [12] Beverly, H. T. (2017). *Navigating Your Way to Start-Up Success: The Key to a Successful Start-up*. Walter de Gruyter GmbH & Co KG.
- [13] Cohan, P. S. (2018). Boosting Your Start-up Common. In *Start-up Cities* (pp. 219-235). Apress, Berkeley, CA. Available at:
https://link.springer.com/chapter/10.1007/978-1-4842-3393-1_8.
- [14] Borins, S., & Herst, B. (2018). Insanely Great: The Dominant IT Fable. In *Negotiating Business Narratives* (pp. 13-22). Palgrave Pivot, Cham. Available at: https://link.springer.com/chapter/10.1007/978-3-319-77923-2_2.
- [15] Collewaert, V., & Manigart, S. (2016). Valuation of angel-backed companies: The role of investor human capital. *Journal of Small Business Management*, 54(1), 356-372. Available at:
<https://onlinelibrary.wiley.com/doi/abs/10.1111/jsbm.12150>.
- [16] Wu, A. (2016). Organizational decision-making and information: Angel investments by venture capital partners. In *Academy of Management Proceedings* (Vol. 2016, No. 1, p. 11043). Briarcliff Manor, NY 10510: Academy of Management. Available at:
<https://journals.aom.org/doi/abs/10.5465/ambpp.2016.4>.
- [17] Hathaway, I. (2016). Accelerating growth: Start-up accelerator programs in the United States. *Advanced Industry Series*, 81. Available at:
http://www.ianhathaway.org/s/Accelerating-growth_-Start-up-accelerator-programs-in-the-United-States_-Brookings-Institution.pdf.
- [18] Mason, C., Botelho, T., & Harrison, R. (2016). The transformation of the business angel market: empirical evidence and research implications. *Venture Capital*, 18(4), 321-344. Available at:
<https://www.tandfonline.com/doi/abs/10.1080/13691066.2016.1229470>.
- [19] Coleman, S., Cotei, C., & Farhat, J. (2016). The debt-equity financing decisions of US start-up firms. *Journal of Economics and Finance*, 40(1), 105-126. Available at: <https://link.springer.com/article/10.1007/s12197-014-9293-3>.
- [20] Viswanadham, N. (2017). Alternative Strategies on Improving Small and Medium Enterprises Access to Seed Capital. A case of Dodoma Municipal, Tanzania. *International Journal of Research Granthaalayah*, 5(9), 1-5. Available at:
http://granthaalayah.com/Articles/Vol5Iss9/01_IJRG17_A07_545.pdf.
- [21] Iliev, P., & Lowry, M. (2017). Venturing beyond the ipo: Financing of newly public firms by pre-ipo investors. Available at:
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2766125.

- [22] Prashantham, S., & Yip, G. S. (2017). Engaging with start-ups in emerging markets. Available at: <https://spiral.imperial.ac.uk/bitstream/10044/1/45924/6/Prashantham%20%26%20Yip%20SMR%202017%20for%20Spiral.pdf>.
- [23] Cohen, S. L., Bingham, C. B., & Hallen, B. L. (2018). The Role of Accelerator Designs in Mitigating Bounded Rationality in New Ventures. *Administrative Science Quarterly*, 0001839218782131. Available at: <https://journals.sagepub.com/doi/abs/10.1177/0001839218782131>.