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Start-up ecosystems comparison: MIT and Greece experiences

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Abstract: This study examines and compares start-up ecosystems of MIT and Greece. Despite the great differences regarding entrepreneurial spirit and tradition, and different economy sizes between the USA and Greece, the study identifies key factors that determine the ability of a start-up ecosystem to promote innovation and contribute positive to the national and international economic development. Furthermore, the study examines the case of Greek start-up ecosystem within the Greek economy, recovering from a decade of declining economic activity.

The literature review examines various factors that affect promotion of innovation and performance of start-up companies, comparing key success factors between MIT and Greek ecosystems. The research involves primary research and the use of structured questionnaires from Greek start-ups; more specifically 130 questionnaires were distributed to the founders of Greek start-ups, and were collected immediately during exhibition events.

The research findings provide a deeper understanding of the challenges and dynamics of Greek start-ups, and a better understanding of the role of ecosystems and business culture between Greece and MIT (Boston, East USA). The findings provide insights to entrepreneurs as they strive to increase the success rates of current and future projects as well as to the wider innovation ecosystem, e.g. business angels, venture capital firms, policy makers, to further improve their success rates or design and implement policies for innovation promotion. Finally, key areas for further research are highlighted.

Key words: innovation management, marketing, start-ups, founders, business models, entrepreneurship, strategy, Greek enterprises

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1. Introduction

While Greece is trying to develop its start-up ecosystem, MIT (Massachusetts Institute of Technology) runs one of the most effective start-up ecosystems in the world. ‘In 2003, Professor Edward Roberts along with then PhD student Charles Easley developed a survey to explore the entrepreneurial activities of MIT alumni. The findings from the initial MIT survey indicated that MIT alumni were significantly engaged in new enterprise formation.’ In 2014 the survey updated

[...] to explore the continuing contribution of MIT alumni to innovation and entrepreneurship in the United States and worldwide. On the one hand, fund raising and capital access became more challenging as the US economy entered a period of deep recession starting at the end of 2007, and venture capital assets and investments declined. On the other hand, entrepreneurship concurrently became a potentially more appealing career choice due both to structural and perceptual changes in traditional employment and occupations, as well as to an apparent groundswell in young people's interests in entrepreneurial endeavors. For instance, the proportion of MIT undergraduates selecting employment in venture-capital-backed start-ups upon graduation increased from less than 2% in 2006 to 15% in 2014 (Roberts, Murray and Kim, 2015).

The MIT alumni-founded companies represented in our survey results exhibit superior performance in terms of survival relative to new US firms as a whole. While roughly 50% of US newly formed businesses survive for five years or more and 35% last for 10 years, approximately 80% of new companies founded by MIT alumni survive for five years or more and 70% last for 10 years according to our results. The survival rate for the MIT-alumni companies is higher at every stage of the company life cycle. Overall, the survey results suggest that about two-thirds of all MIT alumni-founded companies—from those that started as far back as 1945 to those recently founded—continue to exist today. This is consistent with the follow-up telephone survey, which found that 72% of all companies founded are still active (Roberts, Murray and Kim, 2015). In fact, as of 2006, over 25,000 existed, and 900 new ones are created each year. These companies employ over 3 million people with aggregate revenues of approximately USD 2 trillion. To put that in perspective, the total annual revenue from MIT alumni founded companies taken together would make them the 11th largest economy in the world (Aulet, 2013). 2018 GDP in terms of USD for the USA was 20.5 trillion, China 13.6 trillion, Germany approximately 4 trillion, Italy 2.073 trillion, Brazil 1.868 trillion, Canada 1.709 trillion, Russia 1.657 trillion, and Greece 0.218 trillion (World Bank, 2019).

On the other hand, the Greek macroeconomic and business environment in which Greek IT start-ups have been trying to develop their business activities is not an easy one for new—or for existing—business. The austerity measures since 2010 resulted to an economy characterized with high unemployment levels and increased poverty, over taxation and dramatic cuts of income level for the majority of population, as well as IT investment budgets.

However, the macroeconomic environment is not the only negative factor for Greece, as the country has a low score in a number of innovation related indexes.

Greece is not performing well on 'Business dynamism' and 'Innovation capability pillars', placing 120th in 'Growth of innovative companies' and 126th in 'Companies embracing disruptive ideas'. Government regulations appear to be holding the country back in terms of bureaucracy and lack of digitalization, as it ranks very low on 'Quality of land administration' (135th), 'Efficiency of legal framework in challenging regulations' (127th), 'Burden of government regulation' (131st), 'Efficiency of legal framework in settling disputes' (133rd) and 'Future orientation of government' (135th) (EIT Digital, 2018).

According to the EU's Digital Transformation Scoreboard for 2018, Greece performs lower than the EU average in six of the seven dimensions. The country ranks significantly lower than the EU average in the areas of 'Digital Infrastructure' and 'E-leadership'. The situation is also moderate for the 'Supply and demand of digital skills', 'ICT start-ups' and 'Digital Transformation', where there is a lot of room for improvement. In the dimension of 'Entrepreneurial culture', Greece scores better but still below the EU average (EIT Digital, 2018).

2. Methodology

The research was based on both primary and secondary data. Primary data include data collection from 130 founders of Greek start-ups, with a special focus on IT business, collected the period between September 2018 and March 2019. The study examines the Greek start-up ecosystem, with a special focus on companies engaged in digital solutions (IT sector). The objective is to enhance the understanding of the digital start-ups in Greece, by analyzing the founders' views, strategy, and current perception regarding their ICT start-ups. The study examines the Greek start-ups participating in Digital Greece 2018, and a number of related events and exhibitions, focusing on different business sectors. The Greek Ministry of Digital Policy, Telecommunications and Media organized digital Greece. All participating start-ups have participated at least in one start-up boot camp or start-up accelerator programme operating in Greece. To this respect, the founders have received at least basic business training regarding all aspects of establishing and managing a start-up company, such as company formation, product design, market selection, human resources, negotiations, and pitching to potential investors, and therefore are considered to be trained on the business and managerial aspects of running a start-up company. The data were encoded and advanced statistical analysis software (SPSS) was used in order to analyze the correlation between variables, with the use of Spearman Correlation Coefficient.

Regarding the primary data, and more specifically the year of establishment of their start-up in Greece, in terms of having a company officially formatted, 21% of the responders have not yet established their company. 6% of the responders had their companies established during the period 2006–2012, 12% of the responders had their companies established in 2013 or 2014, 9% of the responders had their company established in 2015, 16% of the responders in 2016, 22% of the responders in 2017 and 19% of the responders established their company in 2018. In total, 57% of the companies have been established for less than 3 years (September 2018 – March 2019 was the period of data collection). This demonstrates that the majority of the IT start-ups are new, and furthermore, the companies that have not yet formed officially face several issues in terms of transactions, sales and ability to evaluate actual value of their products.

Secondary data include publically available information and reports from organizations engaged in MIT and Greek start-up and innovation ecosystems, and relevant academic studies.

3. Literature review

3.1. The role of entrepreneurial education

Probably the initial difference of MIT ecosystem approach and other, less innovation-based or innovation friendly ecosystems was the focus on the role of entrepreneurial education; ‘entrepreneurship can be taught’ (Aulet, 2013). This, by itself, is a key difference between MIT’s approach and some established myths, that either you are born an entrepreneur or not.

‘A better understanding of the factors that contribute to start-up failure represents a critical aspect of entrepreneurship studies’ (Okrah, Nepp and Agbozo, 2018). Previous studies (Aulet, 2013; Amit and Zott, 2012; Chesbrough, 2010; Gambardella and McGahan, 2010; Morgan and Vorhies, 2009; Raj and Srivastava, 2016; Evers, 2003) highlight that entrepreneurial success starts with (or requires) a promising product, but business success starts with entrepreneurial education. This approach sets from the very beginning a different point of approach for start-ups ecosystems and highlights the need for entrepreneurial education for all participants. In order for the ecosystem to be effective, both start-uppers need to have entrepreneurial education, in order to reduce their venture risks and increase their chances for survival and growth. Entrepreneurial education is essential for other members of the ecosystem, such as investors (business angels, seed investors and venture capitalists), in order to be able to identify and evaluate business opportunities. Importance of entrepreneurial education has to start before the product—it has to do with identifying opportunities, either with the creation of new products or markets, or with a new approach to solve an existing problem. Product design follows, including a detailed analysis of the product characteristics, and so does market analysis—which is the ideal market (and market segment) for the new product, and examines the appropriate strategy, business model sales processes and pricing options in order to improve the chances for gaining market share. The above studies highlight that a great product is not always enough, and that there are many other factors to consider, both before product design, as well as after the product is ready.

MIT has a long history providing entrepreneurial education to students and developing a healthy ecosystem. Many of MIT alumni and faculty staff participate in the MIT start-ups ecosystem, either as (serial) entrepreneurs or as mentors and investors. On the other hand, Greece entrepreneurial education made its first steps during the last 10 years and slowly introduced at business studies or became available through new business ecosystems, such as special seminars run by accelerators or business boot camps and incubators.

3.2. Founder’s teams

Academic studies highlight the role and importance of founder’s team. ‘MIT research on entrepreneurship determined years ago that solo entrepreneurs were considerably less likely to build successful companies than were teams, thus forming the basis for our second educational principle. A team-based approach to student learning and activities has therefore been adopted throughout most of our curriculum design’ (Roberts, Murray and Kim, 2015).

Further research (Spyropoulos, 2020) examines the cases of Greek start-ups. In the sample of Greek start-up founders examined, regarding the number of founders per start-up com-

pany, 33% of the responders were the only founder, 31% responded that their founders team had two members, 25% responded that their founders team had three members and 11% responded that the founders team included four members. This can be applied to several reasons since some start-ups may have not formed yet as companies and are at an initial early stage; therefore new founders may join the existing founder(s) in the near future.

What is also noticeable is that correlation analysis revealed no correlation significance between the number of founders and perception of success, or education levels.

3.3. Gender

Academic studies for women entrepreneurs (Mustapha and Subramaniam, 2016) summarize previous literature highlighting the role of support from family members. Regarding MIT ecosystem, ‘as with broader trends in the US economy, the overall rate of entrepreneurship is considerably lower among female MIT alumni survey respondents than among their male counterparts. Overall, the rate of entrepreneurship in our sample is 12% for women versus 29% for men’ (Roberts, Murray and Kim, 2015). The study concludes: ‘Female alumni have a much smaller but growing presence as founders, but their firms have relatively limited economic impact.’ This implies that female entrepreneurship is linked to a more secure, less disruptive business approach, with lower possibilities for failure and less opportunities for dramatic scale ups.

Past research also highlights different motives and obstacles for women entrepreneurs, concluding that women

[...] are more likely to engage into business as a means of balancing between work and family demand and also they believe that their existing experience can help them succeed in business. Furthermore, the successes of female entrepreneurs are more likely to be influenced by family needs and support and the age of their children. However, men found dealing with business malpractice posed a great challenge in business where women are less experienced with it (Hazudin, Kader, Tarmuji, Ishak and Ali, 2015).

This appears to be consistent with the Greek founders (Spyropoulos, 2020) from the respondents, 73% were men and 27% women, majority of the IT entrepreneurs were men. However, further statistical analysis, presented in Table 1 below, reveals interested correlations between gender and perception of need for product improvement as well as secure funding the following:

Table 1. Gender: statistical significant correlations

Variable 1	Variable 2	<i>r</i>
Gender	Improve Product as a Challenge	0.182*
Gender	Funding 100k	-0.194*

**p* < 0.05

Gender therefore seems to play a limited role for Greek start-uppers—‘Gender’ variable correlates positive with ‘Improve Product as a Challenge’ and negative with ‘Funding 100k Euros’. This means that women founders consider to a high degree the challenge to improve their product, and that women founders were less likely to secure funding. However, there was no evidence of correlation for Greek start-up founders between gender and several other variables, as academic literature highlights (Roberts, Murray and Kim, 2015). More specifically, further statistical analysis on the perception of success and for four potential reasons for setting up a start-up company as a basis of differentiation or competitive advantage—a different business model, technology, specific business opportunity or process innovation—there is no evidence of correlation significance. This can be interpreted that there is no linear relationship between gender and success or variables related with reasons for starting a start-up company.

Regarding MIT ecosystem,

In terms of company exits, women-founded firms in our survey are less likely to go public or become acquired. Interestingly, they are also less likely to fail. We also observe differences in firm size for female versus male entrepreneurship. Relative to males in the survey, female entrepreneurs from MIT are significantly more likely to own small firms. While 49% of male-founded firms report employing fewer than 10 workers, the figure for female-founded firms is 72% (Roberts, Murray and Kim, 2015).

For Greece such an analysis is not available at present. The focus of women entrepreneurs in Greece on improving product could create a feeling of entrepreneurs who are more willing or eager to create a new standard or value for the customers, and reduce the risks of their start-up organization; to this respect, focus on product improvement could lead to a more stable business. The reasons behind the reverse relationship between women entrepreneurs and funding can be attributed to several factors; venture capitalists may prefer fast growth and more scalable markets, and therefore favour investments in marketing or sales instead of product improvement; or a focus on product improving on behalf of women entrepreneurs may be interpreted as a weak point in a business proposal or plan submitted to venture capitals.

3.4. Serial entrepreneurs

A key finding has to do with serial entrepreneurs. The importance of serial entrepreneurship lays to the fact that serial entrepreneurs boost possibility of success for new ventures and often become parts of the existing start-up ecosystem as mentors and investors.

Roughly 40% of MIT alumni entrepreneurs in our current survey (and 49% of telephone survey respondents) have already launched two or more companies during their careers. In reality, the overall proportion of serial entrepreneurs is necessarily higher due to the ‘right-hand censoring effect’; i.e., alumni who graduated more recently and those who are first-time entrepreneurs are observed here as one-time founders though they may go on to found more businesses in the future (Roberts, Murray and Kim, 2015).

Furthermore, serial entrepreneurs provide answer to a key question: ‘Are successful entrepreneurs born or made? How much of the success in entrepreneurial endeavors results from luck or birth-based characteristics as opposed to learned knowledge and skills?’ Results indicate that the firms in our sample founded by first-time entrepreneurs (compared to experienced founders) have a slightly lower probability of successful exits (IPO or M&A), and have a much higher chance of failed outcomes (bankruptcy or fire sale) when compared to the same subjects’ subsequent entrepreneurial attempts. These results are slightly stronger in regard to the successes of later firms founded in the same industry. Overall, the survey results suggest that entrepreneurial practice and experience improve outcomes (Roberts, Murray and Kim, 2015).

Serial entrepreneurship also reveals another side of the business ecosystem; serial entrepreneurs are business people who proved their value again and again; their success cannot be attributed to luck, or to a specific one-time business opportunity or a single business contact; instead they are entrepreneurs who are able to create extensive network, and able to identify business opportunities, often at different sectors. From another point of view, serial entrepreneurship can be linked with economic freedom ratios, since entrepreneurs are able to create new business in different business sectors, indicating an economy that welcomes and rewards innovation; to this respect stagnant or fragmented economies may not offer opportunities for serial entrepreneurs.

Regarding Greek start-ups, and their previous experience as entrepreneurs, previous research (Spyropoulos, 2019) indicates that

63% of the responders examined had not launched a previous venture. 29% of the responders had previous experience of launching one venture. However, there is also a noticeable percentage of serial entrepreneurs among the responders: 2% of the responders had launched three business ventures, while 6% of the responders had launched three or more previous ventures. What is also noticeable is the success of these previous ventures: 18% of the responders have one venture in the past that is still surviving today, 2% of the responders had two previous ventures that survived, while another 2% had three or more of previous business ventures that survived.

In addition (Spyropoulos, 2019), a number of correlations is revealed and presented in Table 2, between serial entrepreneurs and variables determining achievements and strategy of start-ups.

Table 2. Serial entrepreneurs: statistical significant correlations

Variable 1	Variable 2	<i>r</i>
Previous Surviving Start-Ups	Prototype Achievement	0.196*
Previous Surviving Start-Ups	Funding 100k	0.222*
Previous Surviving Start-Ups	Major Value to Customer	-0.178*
Previous Surviving Start-Ups	New Product	-0.223*
Previous Surviving Start-Ups	New Market Creation	0.193*

**p* < 0.05

Greek start-up founders with previous start-up experience (serial start-uppers) and founders of start-up ventures that are currently operational understand the importance of developing an early prototype; there is indeed a significant correlation between ‘Previous Surviving Start-Ups’ and ‘Prototype Achievement’. Furthermore founders with previous experience find it easier to secure early finance, which can also be interpreted that finance and funding managers or business angels find it easier to finance a start-upper who has a successful history (in terms of surviving start-ups), since there is a significant correlation between ‘Previous Surviving Start-Ups’ and Funding 100k.

Surprising, it appears to be that serial entrepreneurs also focus less on providing major value to customer—there is a reverse analogous relationship between ‘Previous Surviving Start-Ups’ and ‘Major Value to Customer’. This finding may be interpreted for B2B solutions that either existing companies have already resolved their major pains, or that for major pains existing companies would trust an established company as a supplier, instead of a start-up. Furthermore, start-uppers may lack the ability or willingness to confront established companies in a sector that is of major importance to end-customers. Regarding B2C, issues related to start-up solutions usually only rarely address major parts of somebody’s life.

Furthermore, there is a negative correlation between serial start-uppers ‘Previous Surviving Start-Ups’ and ‘New Product Development’; more experienced start-uppers focus less on existing well-defined markets, and develop a new product with innovative characteristics. To the contrary, there is positive correlation between serial start-uppers and ‘Market Creation’. This can be interpreted by the serial start-uppers offer solutions that try to create and define new markets. On the other hand, as presented in Table 3 below, no correlation was found between serial entrepreneurs (Spyropoulos, 2019) and other variables highlighted by academic studies (Roberts, Murray and Kim, 2015).

Table 3. Serial entrepreneurs: no evidence of correlation significance

Variable 1	Variable 2
Previous Start-Ups Surviving Today	Success
Previous Start-Ups Surviving Today	Sales 100k
Previous Start-Ups Surviving Today	Funding 100k
Previous Start-Ups Surviving Today	Technology as Competitive Advantage
Previous Start-Ups Surviving Today	Management as Competitive Advantage
Previous Start-Ups Surviving Today	Business Model as Competitive Advantage
Previous Start-Ups Surviving Today	Intellectual Property as Competitive Advantage
Previous Start-Ups	Opportunity (Reason for SU formation)
Previous Start-Ups	Technology (Reason for SU formation)
Previous Start-Ups	Business Model (Reason for SU formation)
Previous Start-Ups	Process Innovation (Reason for SU formation)
Previous Start-Ups	Improve Product (as Challenge)
Previous Start-Ups	Get More Customers (as Challenge)
Previous Start-Ups	Get Funding (as Challenge)
Previous Start-Ups	Prototype
Previous Start-Ups	POC

Variable 1	Variable 2
Previous Start-Ups	Success
Previous Start-Ups	Sales 100k
Previous Start-Ups	Funding 100k

Source: Author's own elaboration.

Surprisingly, for Greek serial start-uppers, it seems that there is a far complex business reality and a far more complex ecosystem; serial start-uppers, even successful ones with previous ventures surviving, appear to face still severe challenges; lack of correlation evidence shows that there is no relationship between launching a previous project, even if this is a successful one, in terms of survival, and secure sales of over 100k or funding of 100k. Lack of correlation between other variables (reasons for start-up formation, as defined by business opportunity, technology, process innovation or business model, prototype or POC development, and different challenges) indicate that there are no consistencies between ventures; a successful entrepreneur may not use the same driver for differentiation and for forming a new start-up, to this respect there is no a specific pattern for innovating.

These results highlight the complexity of the ecosystem as well; serial entrepreneurs in Greece, even successful ones, still find it difficult to finance their next venture, or to make it a success by securing initial sales of 100k.

3.5. Age factor

The declining age of MIT alumni founders is another notable trend in MIT entrepreneurship. The median age of first-time founders has decreased over the last eight decades. While the median age during the 1940s was 39 years old, the median age for first-time founders who graduated during the 2010s is even lower at 27; the accuracy of this particular snapshot is unclear since this figure is downward biased due to right censoring. These results do not include companies already formed by MIT students who had not yet graduated at the time of the survey. The factors contributing to the falling age of first-time entrepreneurs are not well known. One possible contributor is the declining cost of starting an innovation-driven enterprise (e.g., cloud computing and application program interface [API] tools have lowered the IT costs of starting a company), which in turn reduces the opportunity cost of entrepreneurship. Moreover, enhanced access to alternative forms of capital may also be a factor. For example, our own data show the increasing engagement of recent MIT alumni in crowdfunding to support the invention of a new product or service (Roberts, Murray and Kim, 2015).

Regarding the age of the Greek start-up founders examined (Spyropoulos, 2019), 32% were between 18 to 28 years of age; 32% from 28 to 35; 28% from 36–45, and 8% were over 45 years old. Regarding education, 4% of the respondents were High School Graduates, 40% hold a Bachelor's Degree, 38% of the responders hold a Master's Degree and 18% hold a PhD Degree. Table 4 below reveals a key correlation identified between age and other variables.

Table 4. The age factor: statistical significant correlations

Variable 1	Variable 2	<i>r</i>
Age	Get Funding as a Challenge	0.258*
Age	Prototype	-0.244*
Age	Funding 100k	0.174*
Age	Previous Start-Ups	0.190*
Age	Education	0.353*

* $p < 0.05$

Source: Author's own elaboration.

For Greek start-up founders, Age appears to be an important variable; 'Age' correlates with 'Get Funding as a Challenge' (positive), 'Prototype' (negative), 'Funding 100k' (positive), and 'Previous Start-Ups' (positive). This means that founders of a more mature age realize the importance to secure funding and that they actually have more chances to succeed in securing funds. They are also more likely to have previously launched a start-up. However, it is less likely to have a prototype developed. It seems reasonable to realize the importance of securing finding, especially in a more mature age (since as a person there are increased needs that need to be satisfied) and from a business perspective, especially if you have also launched another start-up (not necessarily successful) to understand the importance of securing funding. This comes in consistency with the fact that VC managers and business angels actually feel more confident with more mature, educated start-uppers. Regarding Prototype development, there may be different interpretations; early stages of start-up development or different types of innovation (e.g. business model, disruptive solutions) may be the reasons for the lack of prototype development in ICT start-ups examined.

3.6. Funding

Financing has been identified to have a strong correlation with innovation and success in most start-ups (Okrah, Nepp and Agbozo, 2018). Despite all efforts, funding is not actually available for Greek start-ups, especially at early stages; from the €215m available in the Innovation and Early Stage Windows, only €13m approximately have been invested so far. An analysis of funding for Greek start-ups is presented in Table 5 below (EIT Digital, 2018).

Table 5. Top 2018 and all time Greek start-ups

Top 10 2018 funded Greek start-ups	Million Euros	Top 10 funded all time Greek start-ups	Million Euros
Workable	43.93	Persado	83.60
Softomotive	21.75	Workable	73.83
Viva Wallet	15.00	Hellas Direct	23.80
Blueground	10.44	Softomotive	21.75
Hellas Direct	7.00	Blueground	17.38
Pollfish	5.48	Metamaterial Technologies	16.26

Balena (Resin.io)	4.35	Balena (Resin.io)	15.13
METIS	4.00	Viva Wallet	15.00
Centour Analytics	2.50	Book'n'Bloom	12.55
Home-Made	2.00	Pollfish	7.76

Source: Author's own elaboration based on EIT Digital, 2018.

What is more important is a profile analysis of the 10 most funded Greek start-ups in 2018. They had their first funding after 5 years, and have a mean of 6.67 years of operations, and 2.9 Funding Rounds. Five of the 10 have a branch in the USA, with offices in 3 countries. They employ between 51–100 people and the mean number of investors is 5.52 (EIT Digital, 2018).

The main problems of the Greek start-up ecosystem become clear at this point. The lack of funding at early stages can kill a promising start-up, depriving resources from product development, market research and investments, especially in Intellectual Property. Companies that survived long enough (5 years) and secured early access to third countries and therefore more mature markets, especially in the USA, appear to have better chances to secure finance from investors to secure their further development. It is questionable, however, whether in such cases capital investment from Venture Capital is an ideal way to go. At this stage, company expansion and growth (considering the international expansion and 5 years of operation) should enable these start-up organizations to secure access to low cost banking finance through loans; from this point of view investments in Greek start-ups appear to rely on banking instead of investment criteria.

It is tempting to attribute such a profiling and lack of early funding to a more generic lack of entrepreneurial education (ability to evaluate opportunities early on) and risk avoidance strategy (select to invest in companies with over 5 years history and already present in more mature markets).

Despite some efforts to secure financing for the Greek start-up ecosystem, and especially to improve its early stage financing, the actual results remain poor: published data in Table 6 indicate a total of 46 Euros investments during the first 6 months of 2019 (Triandopulu, 2019).

Table 6. 2019 semester: a start-up investments in Greece

Venture Capital	Start-Ups
Metavallon VC	Citizen (UK-based)
	Advantis Medical Imaging
	Guest Flip
	Ferry Hopper
	Entomics
	Tendertech (UK-based)
	Perceptual Robotics
	Think Silicon

Venture Capital	Start-Ups
Venture Friends	Blue Ground
	Welcome PickUps
	My Job Now
	Novoville
	Weeengs (UK-based)
	Flex Car
	Plum (UK-based)
	Spot a Wheel
UNI.Fund	Exit Bee
	Nanoplasmas
	Allcancode
	Bibe Coffee
	Flex Car
	Nimbata
	DTWise
Velocity Partners	MyJobNow
	ToorBee
	iCOMAT (UK-based)
Marathon VC	HacktheBox
	LearnWorlds
9AVentures	Melapus
OpenView	Balena
StartUpFundingClub	Intoolab

Source: Author's own elaboration based on Triandopulu, 2019.

It has to be noted that some investments refer to the UK-based companies (a more investment-friendly business environment during 2019) and scale-ups (e.g. BlueGround). Considering the fact that Scale-Up BlueGround alone was funded with USD 8m and UK-based Weeengs was funded with GBP 6.5m, while UK-based Plus also secured financing of GPD 4.5m, results a net funding for Greek-based companies of less than 30m Euros.

3.7. International students

International students (defined here as individuals born outside the United States) in our MIT alumni survey were as likely to start their own ventures as the domestic students. However, they were more likely to be serial entrepreneurs, meaning that foreign-born students account for a disproportionately high proportion of MIT alumni-founded companies. Companies founded by international students exhibited both a lower failure rate and a lower likelihood of achieving a successful exit (Roberts, Murray and Kim, 2015).

An additional study (Zafar and Khan, 2013) highlights the role of culture in entrepreneurship; it is tempting to attribute success of MIT international students to a combination of culture but also because of entrepreneurial education.

3.8. Intellectual property

Previous studies (Hormiga, Batista-Canino and Sánchez-Medina, 2010) also highlight the role of intangible assets on start-ups.

In terms of direct contribution to innovation, 31% of the MIT alumni responded that they are named as an inventor on a patent. Furthermore, more than half of MIT alumni noted that they were responsible for new product development at a firm of which they were not a founder (Roberts, Murray and Kim, 2015).

The Greek and European Intellectual Property systems have some differences with the USA; however, taking into account the difficulty of Greek start-ups to secure early stage funding, it is clear why it becomes difficult for them to invest early on Intellectual Property Rights.

4. Discussion on key findings

The first finding is the growing need for entrepreneurial education in Greece; and today there are several programmes already in Greek universities and other private and public organizations offering entrepreneurial education in Greece. However, entrepreneurial education needs to become part of all members of the ecosystem, such as founders and investors, in order for the ecosystem to be further developed.

The next finding is that for a large part of start-ups, there is a need to form stronger team of founders; 64% of them are teams of 1 or 2 founders which contradicts MIT experience for greater teams and subsequently wider sets of skills.

Regarding Gender, it appears that men tend to be more engaged to entrepreneurship in relation to women in both ecosystems. Women in MIT ecosystem tend to set up smaller companies, with a higher rate of survival, while women start-uppers in Greece find it more difficult to secure funding and a stronger need to improve their product.

As far as serial entrepreneurs, MIT experience suggests that serial entrepreneurs actually improve their performance as they gain experience from one venture to another, and it becomes easier to secure funding; however, results from the Greek start-up founders suggest otherwise.

Regarding Age, it appears to be a continuous trend for MIT ecosystem to start business early—the median age is 27 or even lower, since many entrepreneurs who start their businesses during their studies are not included in MIT study; the Greek group appears to have 28% more than 36 years old and another 8% more than 45 years old. Clearly, MIT approach favours younger ages, with less experience but with a higher level of entrepreneurial education and more focused ecosystem support.

The main findings identified by comparing the MIT and Greek start-up ecosystems, excluding the obvious differences between the economies of the USA and Greece and market sizes or absolute numbers of participants in each ecosystem, are presented in Table 7 below.

Table 7. Main differences between MIT and Greek start-up ecosystems

Key Issue	MIT Ecosystem	Greek Ecosystem
Entrepreneurial Education	Applied for a long time	Applied just recently
Founders	Teams of founders considered more effective	33% just 1 founder, 31% just 2 founders
Gender	Women less possible to fail with lower exits	Women focus on product improvement; harder to secure funding
Serial Entrepreneurship	40%-49% entrepreneurship alumni established 2+ companies. First time entrepreneurs faced with higher possibility to fail and lower chance of successful exits	38% of start-up founders with previous ventures experience, 22% with at least one venture still surviving
Age	Declining: mean today is at 27 years old (not including students)	32% up to 28 years old, 32% up to 35 years old, 28% up to 45 years old
Funding	Early Funding Available	Early Funding Not Available
Internationals	International Students start Domestic Ventures	No data available
Intellectual Property	31% of alumni hold patents, over 50% responsible for new product development	No data available, however difficult to invest in patents due to lack of early stage funding

Source: Author's own elaboration.

5. Limitations of the research

While MIT ecosystem has a long tradition of entrepreneurial education and success, alongside with available resources, the Greek start-up ecosystem has a far more limited experience-relevant education and availability of resources. Furthermore, the majority of the start-ups examined are less than 5 years old; therefore, it may be too soon to draw any conclusions.

In addition to this, the Greek start-ups and their ecosystem evolved during the last few years within a negative economic climate, with Greece suffering major GDP losses, income loss for the majority of the population and investments budgets cuts from established companies. Therefore, market sizes are small, with less segmentation opportunities; targeting the international markets appears to be the best possible strategy for Greek start-ups.

Further research is recommended to explore further the role of culture and entrepreneurial education, in a growing economy.

6. Conclusions

The differences between the USA economy (MIT basis) and Greek economy in terms of economy size, growth (at least during the last decade), innovation culture and entrepreneurial education are so great that any comparison between MIT and Greek start-up

ecosystems would appear futile; however, the study highlights several issues that can be addressed.

First of all, entrepreneurial education and any society and economy with the ambition to grow through innovative start-ups needs to focus on providing such education, especially early on, since the age for people starting start-up companies is declining. Secondly, early funding is critical for a healthy start-up ecosystem; this issue, however, is both an issue of entrepreneurial education and availability of resources. Finally, the role of the supportive ecosystems is important for the future of start-up companies, especially on their early stages.

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Ekosystemy start-upowe – porównanie doświadczeń amerykańskich (MIT) i greckich

Abstrakt: W artykule dokonano przeglądu i porównania amerykańskich (MIT) i greckich ekosystemów start-upowych. Przeprowadzone badania wykazały, że pomimo znaczących różnic w tradycjach podejmowania i prowadzenia działalności gospodarczej oraz wielkości gospodarki obydwu krajów kluczowe czynniki determinujące zdolności ekosystemu start-upowego do promowania innowacji i wkładu w krajowy i międzynarodowy rozwój gospodarczy pozostają takie same. Dodatkowo poddano analizie przypadek ekosystemu start-upowego funkcjonującego w Grecji, której gospodarka odradza się po dekadzie spadku aktywności ekonomicznej.

Przegląd literatury koncentruje się na analizie czynników wpływających na promocję innowacyjności oraz na wyniki przedsiębiorstw rozpoczętających działalność rynkową; porównano czynniki sukcesu start-upów

greckich i amerykańskich. Badania własne obejmowały 130 greckich start-upów i zostały przeprowadzone wśród ich założycieli z wykorzystaniem ustrukturyzowanego kwestionariusza badawczego. Wyniki badań umożliwiają głębsze zrozumienie dynamiki rozwoju greckich start-upów i wyzwań, z jakimi zmagają się powstające przedsiębiorstwa; umożliwiają także lepsze zrozumienie roli ekosystemów i kultury biznesowej w Grecji i w Stanach Zjednoczonych (MIT, Boston). Rezultaty przeprowadzonych badań mogą być przydatne dla przedsiębiorców dążących do osiągnięcia sukcesu w realizowanych i planowanych projektach, a także dla szerszego ekosystemu innowacji (np. aniołów biznesu, firm venture capital, decydentów) w dążeniu do podniesienia wskaźników sukcesu lub opracowania i wdrożenia zasad promocji innowacji. W zakończeniu artykułu wskazano kluczowe obszary dalszych badań.

Słowa kluczowe: zarządzanie innowacjami, marketing, start-up, przedsiębiorcy, modele biznesu, przedsiębiorczość, strategie rozwoju przedsiębiorstw, przedsiębiorstwa greckie