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FINAL THESIS:

A UNIFYING AND COMPREHENSIVE FRAMEWORK TO ASSES
THE SUCCESS OF STARTUPS: FROM THEORY TO PRACTICE

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*To my family,
for the support.*

*To Olakorede,
for the inspiration.*

*To Sara,
for the serenity.*

INDEX

| | |
|---|-----------|
| INTRODUCTION..... | 9 |
| SECTIONS | 12 |
| 1. OVERVIEW..... | 15 |
| 1.1 THE “OBJECTIVITY DILEMMA” | 15 |
| 1.2 FIRST OUTLINE: A MACRO-NUMERICAL PERSPECTIVE | 17 |
| 2. MACROECONOMIC ANALYSIS | 21 |
| 2.1 START-UPS GEOGRAPHY: OVERVIEW | 21 |
| 2.2 THE MODEL | 24 |
| - Assumptions:..... | 24 |
| - Macro-Regions esteems:..... | 25 |
| - Building “ α_C^R ”:..... | 26 |
| 1. GDP:..... | 27 |
| 2. GDP Growth (yearly): | 29 |
| 3. “Value-Added” composition:..... | 32 |
| - Formalizing the model:..... | 36 |
| 2.3 START-UP GEOGRAPHY: A MAP | 37 |
| 2.4 COMPARATIVE ANALYSIS..... | 41 |
| - Ranking 1 and Ranking 2:..... | 41 |
| - Drivers: | 43 |
| 1. ECONOMIC POLICIES:..... | 44 |
| 2. LABOR AVAILABILITY:..... | 45 |
| 3. SERVICES AVAILABILITY: | 47 |
| 4. START-UP DISTRICTS: | 48 |
| 5. Foreign Direct Investment (FDI):..... | 50 |
| 2.5 MULTI-CRITERIA DECISION ANALYSIS | 51 |
| 2.6 A MACRO-ECONOMIC RANKING | 55 |
| 2.7 CONCLUSIONS | 57 |
| 3. THEORETICAL FRAMEWORK..... | 59 |
| 3.1 WHAT IS A STARTUP: AN OVERVIEW OVER COLLIDING DEFINITIONS..... | 60 |
| 3.1.1 VISION, NEWNESS, UNCERTAINTY | 69 |
| 3.1.2 STATE OF MIND, GEOGRAPHY, GROWTH RATE | 74 |
| - STATE OF MIND & GEOGRAPHY:..... | 77 |

| | |
|--|------------|
| - GROWTH RATE:..... | 79 |
| 3.1.3 NEW KAUFFMAN INDEX..... | 85 |
| - RATE OF NEW ENTREPRENEURS:..... | 87 |
| - OPPORTUNITY SHARE OF NEW ENTREPRENEURS:..... | 88 |
| - STARTUP DENSITY: | 88 |
| 3.1.4 PARAMETERS GENERALIZATION | 89 |
| 3.1.5 OUR STARTUP, A DEFINITION | 94 |
| 3.2 STARTUP: SHAPING THE BUSINESS AND GETTING FUNDS..... | 95 |
| 3.2.1 BUSINESS MODEL..... | 96 |
| 3.2.2 THE INVESTMENT CHALLANGE | 99 |
| a) CROWDFOUNDING:..... | 103 |
| b) BUSINESS ANGELS:..... | 106 |
| c) VENTURE CAPITAL: | 108 |
| d) FAMILY OFFICE: | 110 |
| e) INCUBATORS & ACCELERATORS: | 113 |
| 3.2.3 OVERCOMING THE INVESTMENT CHALLENGE | 116 |
| 3.3 TYPICAL STARTUP PHASES | 117 |
| 3.3.1 SEED & DEVELOPMENT | 119 |
| 3.3.2 STARTUP | 120 |
| 3.3.3 GROWTH & ESTABLISHMENT | 121 |
| 3.3.4 EXPANSION | 122 |
| 3.3.5 Maturity & POSSIBLE EXIT..... | 123 |
| 3.4. CONCLUSION: A DYNAMICITY FRAMEWORK | 124 |
| 4. MICROECONOMIC ANALYSIS | 129 |
| 4.1 AUDIO STREAMING SERVICES..... | 130 |
| a) RDIO | 132 |
| b) SPOTIFY | 135 |
| c) TIDAL | 138 |
| 4.2. TRAVEL FARE AGGREGATORS | 143 |
| a) VENERE (EXPEDIA) | 145 |
| b) BOOKING.COM | 149 |
| c) IJENDU | 153 |
| 4.3 CREATIVITY-SHARING PLATFORMS | 159 |
| a) QUIRKY..... | 162 |
| b) KICKSTARTER | 166 |
| c) INDIEGOGO..... | 169 |
| 4.4. PARAMETERS DEFINITION | 173 |
| 4.4.1. CROSS-INDUSTRY SUCCESS ANALYSIS..... | 174 |

| | |
|---|------------|
| (i) Business Model success..... | 175 |
| (ii) Branding success..... | 176 |
| 4.4.2. CROSS-INDUSTRY FAILURE ANALYSIS | 177 |
| (i) Business Model failure..... | 178 |
| (ii) Branding failure..... | 180 |
| 4.4.3. CROSS-INDUSTRY “WIP” ANALYSIS..... | 183 |
| 4.4.4. PARAMETERS GENARALIZATION..... | 185 |
| (i) Digital Marketing Efficiency..... | 186 |
| (ii) Business Model’s Strategic Integrity..... | 191 |
| (iii) Accountability Index..... | 199 |
| 4.5 CONCLUSION | 206 |
| 5. MODEL DEFINITION..... | 209 |
| 5.1 MODEL DEFINITION | 209 |
| 5.2 DATABASE | 223 |
| 5.3 EMPIRICAL ANALYSIS..... | 229 |
| 5.3.1 MODEL APPLICATION | 229 |
| 5.3.2 STATISTICAL ANALYSIS | 239 |
| 5.3.3 RATING SYSTEM..... | 249 |
| 5.3.4 PROBABILISTIC BREAKDOWN | 253 |
| 6. CONCLUSION | 257 |
| APPENDIX | 263 |
| BIBLIOGRAPHY..... | 277 |
| SITOGRAPHY AND REPORTS | 285 |
| ACKNOWLEDGMENTS | 289 |

INTRODUCTION

This essay is structured as a comprehensive investigation over the “*startup*” phenomenon, with the primary aim of creating an analytical model which will be used to provide valuable insights over the probabilities of success of startups in a given context. The thesis is composed by four main sections: *Macro-Economical Analysis*, *Theoretical Framework*, *Micro-Economical Analysis* and *Model Definition*.

The fundamental hypothesis which set the basis for this project was the widespread idea that the success of a startup depends, predominantly, on the ecosystem in which it operates. For instance, several theories and studies suggest that startups which develop in “*startup-friendly*” environments tend to perform better than those operating in less accommodating contexts.

While the relevance of a positive and friendly environment for the flourishing of businesses is unquestionable, high levels of performance appear to have a tighter correlation with struggle than with harmony.

Starting from this basic concept, this paper aims at investigating the possible correlation between “*startup-friendly*” environments and startup’s high levels of performance as well as other success drivers which may have been neglected or underestimated.

At the basis of this project, thus, there are a number of issues which, however can be trimmed down to three root questions:

- What is a startup? And can we define it with accuracy through a comprehensive framework?
- To what extent do economic policies, Country-specific variables and other Macro-economical factors influence the development of domestic startup ecosystems? Also, can we find a single indicator to describe a Country for its “startup-friendliness”?
- If the former is true, is there a meaningful correlation between high-performing startups and startup-friendly ecosystems? And, if this is not the case, which are the main drivers for a startup’s success?

In order to provide an answer to these fundamental interrogatives, and given their extent, we approached research in a semi-hierarchical way. Meaning that each question was broken down into more well-defined issues which were, then, analyzed as “single units”. Ultimately, the results of each specific analysis were pulled together and integrated into a wider and more comprehensive solution.

As a matter of fact, this paper shows how startups can be described as dynamic economic agents which are not pursuing some sort of equilibrium – as most economic theories describe firms – but, instead, move within a framework in a non-linear way. Meaning that

these organizations are not just seeking an equilibrium between a number of variables – say, demand and supply or costs and revenues – but are moving within the framework we called Dynamicity Diagram without following any “fixed path”.

Secondly, the second result of this analysis is to show how exogenous factors at a Country-level – such as economic policies, the presence of services, proximity to startup districts and others – deeply influence the number of startups developing in that Country. Consequently, by studying a set of these factors, this paper shows how to possibly describe Countries through a single aggregated indicator according to their “startup-friendliness”. An empirical study over the 195 most developed economies, then, allows us to rank these Countries in accordance to the aforementioned indicator.

As for the third interrogative, evidence from this study demonstrates not only how startups’ high levels of performance are to be attributed primarily to endogenous factors – meaning variables depending on the company itself and not from its environment –, but also that startups developing in “uncomfortable” contexts often outperform their counterparts in more “startup-friendly” environments.

In addition to that, this paper introduced an innovative way to rate startups in relation to their probabilities of success, based on the evidence just described.

SECTIONS

In order to better-define how this thesis has been structured, what follows is a brief outline of its fundamental sections:

1. Overview:

In the *1st Section* of this study will be defined the main assumptions on which the whole project has been built upon. In particular, a brief discussion will be conducted over the necessity of a more accurate and comprehensive definition over the “*startup*” phenomenon.

Furthermore, will be presented a first, broad, hypothesis over the magnitude of the subject of this study, based upon an interesting mathematical theory known as the *Fermi’s Paradox*.

2. Macroeconomic Analysis:

The *2nd Section* of this paper revolves around an analysis over the Macro-economical drivers influencing the growth and development of startups in different contexts.

In particular, will be studied the 195 most developed economies in the World in order to enucleate a set of drivers

which have a meaningful impact over the development of a startup ecosystem.

Additionally, these drivers will be combined and used to propose a ranking system describing these economies “*startup-friendliness*”.

3. Theoretical Framework:

In the *3rd Section*, is proposed an innovative definition of *startups* as dynamic economic agents starting from the analysis and comparison between the most wide-spread definitions of the phenomenon.

Furthermore, will be briefly described the most popular fundraising methods as well as the typical lifecycle phases of a startup.

Lastly, will be introduced a possible framework describing startups as *dynamic economic agents* and its implications.

4. Microeconomic Analysis:

The *4th Section* of this thesis aims at defining a set of Micro-economical variables which describe a startup’s performance starting from a comparative analysis of nine business cases.

Then, three parameters are identified and broken-down into their constituting variables, which are analyzed as the major Micro-economic drivers influencing startups' success.

5. Model Definition

In the 5th Section is introduced a final and comprehensive model composed by the combination of Macro-economical, Theoretical and Micro-economical aspects describing the success probabilities of a startup in a given environment.

Additionally, a study over a 135-startup sample is conducted in order to prove the robustness and applicability of the model.

Furthermore, a statistical study over the sample will provide useful insights describing the correlation between exogenous (Macro) or endogenous variables and startups' success.

Lastly, it is introduced a rating system describing the probabilities of success of a startup.

6. Conclusion:

In the 6th Section of this paper will be presented the findings of the all study as well as an answering to the hypothesis defined at the beginning of the project.

1. OVERVIEW

1.1 THE “OBJECTIVITY DILEMMA”

In the last decade, newborn companies started calling themselves “startups” more and more often, in particular if their business was related to some extent with technological products or innovative services.

The mix of extensive founding practices, young talents and technology, thus, appears to be what makes the difference between a “normal” SME and a start-up.

“But what is a startup, really?”

Although the aim of this research was not to directly analyze the validity of the various definitions about “Startup”, the delineation of this term in a coherent and objective way appeared to be necessary for the structural integrity of this whole project.

The first part of this extract, thus, has been devoted to defining the concept of Startup that will then be used for all the further digression.

The main problems that emerged were almost entirely related to the fact that quite a number of definitions in Economic Studies are – at least to some extent – subjective. This doesn't mean they are not true or not verifiable, it simply entails that there are different opinions – often contradicting one-another – about the very same topic.

With the exception of the enriching experience provided by studying and understanding different perspectives, this disagreement has a very crucial downside: you necessarily have to pick one definition as valid and discard the others.

Given that agreeing to one unique definition would have resulted in the impossibility to carry on the main purpose of this project, the only reasonable solution entailed forging a new one.

In particular, this new concept of Startup needed to be as "objective" as possible, since the whole study would have been built on that. Two main factors, thus, concurred on the need for this new definition: from one side, there's the lack of agreement with the multitude of definitions about Startups; and, from the other, there's the need for a very objective definition for the research.

The first step in this direction, hence, was analyzing each available definition – with particular attention to those which focused on completely different points – in order to retain only the aspects which entailed some degree of objectivity.

After that, all this "bits and pieces" were linked together with the "parameters" built in the further chapters (See Section 3.1).

Finally, is provided a cohesive and ultimate definition about what is a Startup (*See Section 3.1.5*).

One last point which happens to be worth underlining, is the fact that this “objective methodology” which has been adopted since the beginning of the project, became the common denominator for the entire study. Meaning that the main definitions, concepts or assumptions that will be provided further on in the research have been developed or tweaked following this very same methodology.

1.2 FIRST OUTLINE: A MACRO-NUMERICAL PERSPECTIVE

First of all, before giving a definition about startups, a number of other issues appear to need an explanation. One first question that surely deserves an answer in order to have the basis of this work ready and set, is:

“How many startups are there?”

Now, there is no way a totally right answer will come out from this few lines, but it will be an esteem that, with a good degree of confidence, could be used as a sort of "reference number".

To make this esteem, will be used a technique described by a quite notorious theorem: *Fermi's Paradox*.

This theorem, basically, aims at giving an esteem regarding a phenomenon about which little or no concrete data is available; it represents the apparent contradiction between lack of evidence and high-probability estimates.

The first problem in defining this number is that is actually possible to find the exact number of small businesses (SMBs) that started in a particular location, what results almost impossible to know is if they indeed are a "Startup" or not.

The other problem, is that finding this specific data for every single location around the Globe could be rather time-consuming other than particularly complicated. To avoid this issue, the solutions are only two: either extrapolate or choose to neglect.

The following lines use the latter, for the reasons that follow.

For now, it's safe to borrow from the existing GEM (2015) framework. Roughly, there are 100 countries accounting for almost 73% population of the entire World which participate to the "Global Entrepreneurship Monitor". That is where the data had been extrapolated. The remaining 27% of the population will be neglected simply because the aforementioned economies account for more than

90% of world's total GDP. Brain drain from these countries will simply improve the reliability of the esteems over time.

The following graph (*Figure 1*) depicts the value of the TEA index for seven selected Countries – with very different Economic systems – from 2001 to 2015.

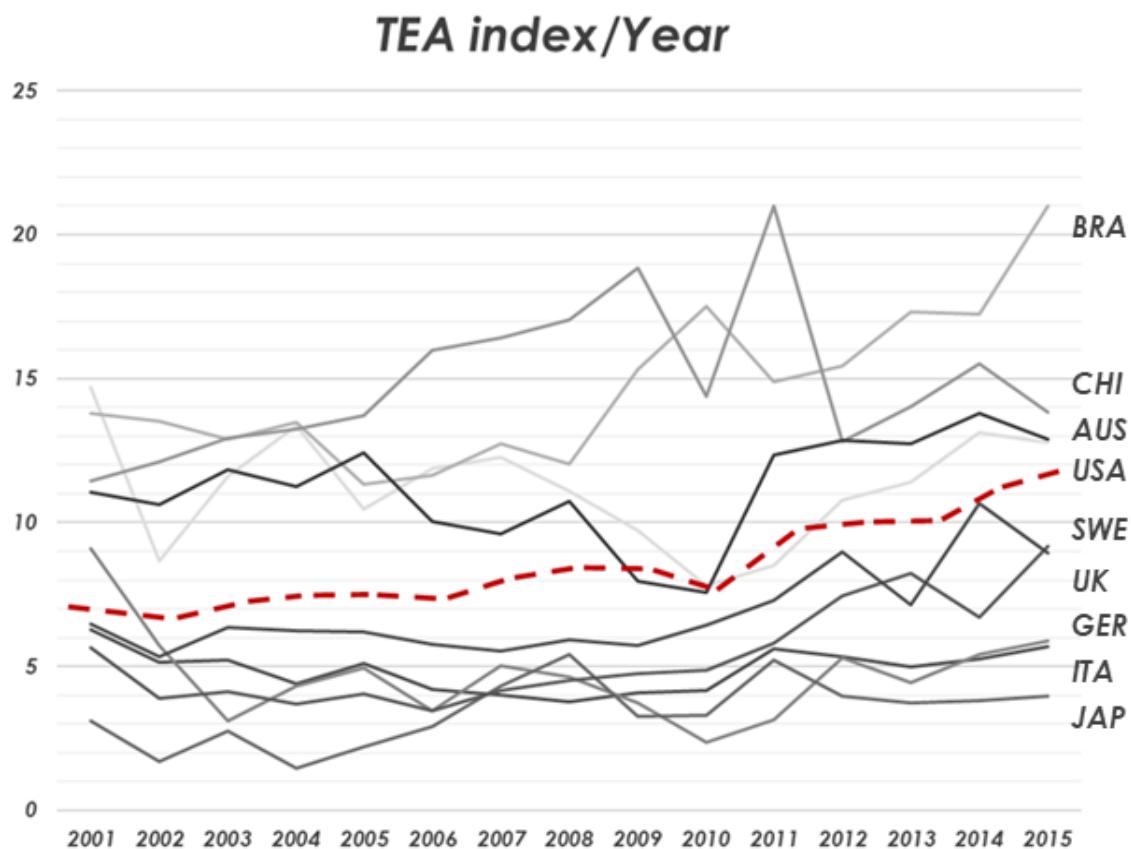


Figure 1: Total Early-Stage Entrepreneurial Activity Index (TEA); 2001-2015; Personal Processing from GEM 2016/2017 Global Report

As shown in *Figure 1*, the “Total Early-Stage Entrepreneurial Activity” index (TEA) is on the rise, showing a global positive trend in the last 5 years, and an average growth of 4.2% in 2014. This means that

the number of new-born entrepreneurial activities is increasing on a Global scale.

Therefore, roughly one-fifth of the population between 18-65 is involved in some form of entrepreneurial activity. Implying that this sample represents the 20% of 60% of 73% of total World-population, its numerosity sets around 613M people.

Moreover, this 613M entrepreneurs should attempt to start about 396M companies. Given that success rate is one third (Goel A & Goel A. K. (2015)), that means about 133M new startups are born annually.

A similar approximation is found in what Paul D. Reynolds, Director of the Research Institute “Global Entrepreneurship Center”, said: “[...] Using the formula above, I think this means that with 472 million entrepreneurs worldwide attempting to start 305 million companies, approximately 100 million new businesses (or one third) will open each year around the world. I think we can safely say that this stat is the best we can find today” (Moya K. M., (2017)).

Since a definition of Startup is still to be adopted for this thesis (*See Section 3.1.5*), the previous data only represents a sort of reference that will be used as a benchmark for the next chapters.

Again, this is far from being a precise number – although it is somewhat coherent with the data of the previous paragraph – but it is as close as it is possible to get to the real one at this stage.

2. MACROECONOMIC ANALYSIS

This section revolves around a Macroeconomical analysis of the startup phenomenon, and has two major objectives.

First, it defines startups from a Macro-perspective, analyzing data and giving a broad view of the magnitude of the subject.

Then, by working on the data collected, it defines a set of parameters which will be used to generate a Country-Ranking System related to the startup-friendliness of the Top-195 economies globally.

Data and parameters which have been built in this section will then be used for constructing the final model.

2.1 START-UPS GEOGRAPHY: OVERVIEW

The second, crucial, problem which needed attention before starting, was understanding where start-ups are located. The intention here, was not of building a sort of world-map signaling every single start-up present globally. The objective was trying to provide a sort of bird-eye view of the regions/countries with the highest concentration of start-ups around the world.

Having said that, we used the following process to extrapolate the data needed. First, data were collected from the most famous open-source databases available online – CrunchBase, CrunchTech, AngelList, Fortune – as well as from Institutional reports regarding economic policies – EU website, World Bank, UN, US Bureau of Statistics.

What resulted from this research were a number of lists of a great amount of companies with “start-up-like” characteristics.

These data, although very rough, were of two different magnitudes:

- Macro-Regional: data as mean Values split by Economic Region, namely: BRICS, EU, Middle-East, Oceania, US and three “Others” – split into the following categories: *Group A*; *Group B* and *Group C*;¹

Group A: Mexico, Republic of Korea, Canada, Japan;

Group B: Ecuador, Angola, Puerto Rico, Iraq, Kazakhstan, Peru, Bangladesh, Chile, Pakistan, Colombia, Singapore, Hong Kong SAR, Nigeria, Argentina, Switzerland, Indonesia;

Group C: Dominica, Comoros, Saint Vincent and Grenadines, Saint Kitts and Nevis, Gambia, Grenada, Guinea-Bissau, Antigua and Barbuda, St. Lucia, Seychelles, Timor-Leste, Central African Republic, Cabo Verde, Djibouti, Belize, Liberia, Bhutan, Lesotho, Burundi, Guyana, Togo, Swaziland, Sierra Leone, Barbados, Suriname, Mauritania, Bermuda, Somalia, Malawi, Kyrgyzstan, Guinea, Niger, Tajikistan, Rwanda, Benin, Congo, Haiti, Bahamas, South Sudan, Madagascar, Armenia, Burkina Faso, Chad, Namibia, Mongolia, Equatorial Guinea, Lao People's Democratic Republic, Nicaragua, Mali, Senegal, Georgia, Gabon, Jamaica, Botswana, Zimbabwe, Mozambique, Honduras, Zambia, Nepal, Trinidad and Tobago, El Salvador, Paraguay, Uganda, Cameroon, Côte d'Ivoire, Bolivia, Democratic Republic of the Congo, Turkmenistan, Ghana, Tanzania, Macao SAR, Panama, Azerbaijan, Uruguay, Costa Rica, Ethiopia, Myanmar, Kenya, Guatemala, Uzbekistan, Dominican Republic, Cuba, Sudan

- Country-Specific: data as “approximative value” divided by Country for the countries with the top-195 GDPs in 2015².

After this, data were merged into a single dataset and “cleaned” by erasing outliers and repetitions.

What resulted was a sort of esteem of the average number of startups present in a Country “C”: “ \bar{N}_c ” described as:

$$\bar{N}_c = \frac{1}{8} \sum_{d=1}^8 (N_c^d)^3$$

The basic concept was the following: given that these data regarded both single Countries and Macro-Regions, we wanted to create a database big enough to enable us to build the approximate value (of start-ups in each Country) in a way that was as precise as possible. For what concerns Country-Specific data, data from different sources were simply linked to the same Country, the data used, thus, are the exact data obtained from the various reports. The Macro-Regional data, instead, needed some calculations in order to be considered meaningful.

² <http://data.worldbank.org/datacatalog/GDP-ranking-table>

³ with “ \bar{N}_c ” the average number of startups present in a Country “C” and “ N_c^d ” the number of startups for a Country “C” in a database “d”

2.2 THE MODEL

- *Assumptions:*

The sample in analysis consisted of the first 195 economies of 2015⁴, as they count for approximately the 97,589% of the World's total GDP.

The Macro-Region "Oceania" comprehend also data of Lao, Cambodia and Viet Nam (for a statistical purpose, the impact on the final results are negligible).

Three Macro-Regions – for those Countries which did not belong the BRICS, EU, Middle-East, Oceania or US – were created for this study; namely:

Group A.: GDP \geq 1.000 Bn. US\$;

Group B.: GDP between 100 Bn. and 1.000 Bn. US\$;

Group C.: GDP < 100 Bn. US\$;

I approximated " N_C^i " with no decimal, as companies are integer entities.

⁴ <http://data.worldbank.org/data-catalog/GDP-ranking-table>

Percentages are rounded to the 2nd decimal. Rounding to the 3rd would have resulted in an average variance of 0,000031; which is negligible.

- *Macro-Regions esteems:*

As data regarding Macro-Regions were average values (\bar{N}_R), I needed to allocate them to each country belonging to the region. To this aim, I used the following approximation:

$$N_C^d = \bar{N}_R \cdot |R| \cdot \alpha_C^R$$

With " N_C^d " the number of startups " d " in a specific country " C "; " \bar{N}_R " the average number of startups in a specific region " R "; " R " the number of Countries in the Region " R "; and " α_C^R " a proxy used to allocate the Region-data to each Country.

- *Building “ α_C^R ”:*

The proxy “ α_C^R ” has a crucial meaning in this specific calculation. The reason it resulted necessary was that allocating evenly the number of startups between the Countries belonging to the same Region was not going to yield meaningful results – Germany has definitely a higher number of startups if compared with Luxemburg.

Thus, this proxy represents a measure of the “weight” of each Country in its Region (in terms of number of startups).

In order to build a meaningful proxy, we analyzed the most used traditional Macroeconomic indicators of performance⁵. Such indicators were, hence, used to compute the percent contribution of a Country to its Region (i.e. GDP% (Country “C”) = GDP_Country “C”/GDP_Region).

Ultimately, the product between the proxy “ α_C^R ” and the number of startups of the Macro-Region was used in order to obtain a consistent dataset. In particular, the sample consisting of 195 Countries was analyzed in relation to the following Macro-indicators:

⁵ https://unstats.un.org/unsd/economic_main.htm

1. GDP:

It is the most commonly used Macroeconomic indicator when analyzing a Country's performance; but, for precision's sake, the inflation effect had to be taken into consideration as well. Thus, in order to measure the real economic growth rate, the GDP was adjusted for inflation.

GDP is calculated as the sum of consumer spending, business spending, government spending and the total of exports minus imports (with the very tricky issue, as Bourguignon F. & Marin D. (2002) points out, of products crossing borders multiple times, but we won't tackle that in this specific project). In order to factor-in inflation and obtain the real GDP figure – where " GDP^* " describes the "real GDP"; " GDP_n " the "nominal GDP"; and " i_0 " the inflation since the *base year*⁶ the following formula was applied:

$$GDP^* = \frac{GDP_n}{(1 + i_0)}$$

⁶ The base year is a designated year that is used as a comparison point for economic data such as the GDP.

The hypotheses we wanted to verify were that there would have been a strong positive correlation between high-GDPs and high start-up concentrations.

This would have been mainly due to the fact that, on average, a Country with high GDP has a wider pool of potential “new founders” and, thus, a higher number of start-ups.

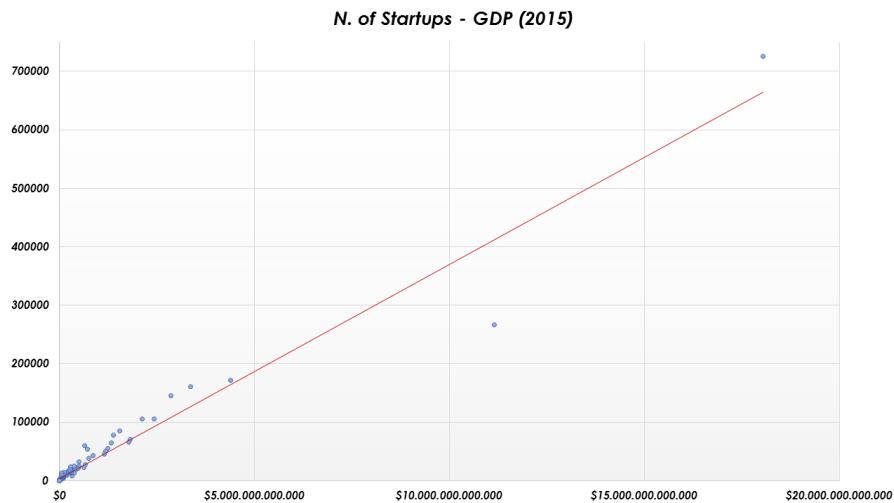


Figure 2 - Number of Startups/GDP*; 195 Countries with highest GDPs*; 2015; Personal Processing from U.S. Bureau of Economic Analysis (BEA)

From the graph above we can depict that the hypothesis of a strong correlation between a Country's GDP and its number of start-ups is verified. This means that the higher the GDP the higher, proportionally, the number of startups will be. The direct cause of this relation may be found in the fact that high-GDPs Countries have, usually, a huge availability of commercial services (internet connection speed, express

deliveries, marketing agencies, etc.) which are a crucial requirement for new-born start-ups. Moreover, higher GDPs often means higher capital availability; since third-parties-investments are almost an obliged step for startups, the presence of capital in the Home-Country happens to be quite crucial for the success of a start-up and its development.

2. GDP Growth (yearly):

The real economic growth rate is expressed as a ratio that shows the rate of change for a country's GDP from one period to another, typically year on year (YOY).

Another alternative economic growth measure is the Gross National Product (GNP), which is sometimes preferred if a Nation's economy is substantially dependent on foreign earnings. The real economic growth rate is a more useful measure than the nominal GDP growth rate due to the fact that it takes into account the effect that inflation has on economic data. The real economic growth rate is a so-called *constant dollar*⁷ figure and, therefore, provides a consistent measure that is not subject to distortions by periods of extreme

⁷ A constant dollar is an adjusted value of currency used to compare dollar values from one period to another: <http://www.investopedia.com/terms/c/constantdollar.asp>

inflation or deflation – such as the Economic Crisis of 2007.

In particular, we analyzed the yearly-GDP-Growth related to the last 5 years (2010-2015); this choice was necessary because of the relative stability of these data in comparison to the data of the last 10 years (2005-2015).

Indeed, data from the five years 2010-2015 have a SD which is almost 1:10 of the SD related to the decade of 2005-2015.

The formula used is as follows:

$$\Delta GDP = \frac{GDP_{y2} - GDP_{y1}}{GDP_{y1}} \%$$

Similarly, to the hypothesis for the GDP*, we expected a strong correlation between the GDP* Growth Rate and the number of start-ups present in a Country. The yearly Growth Rate of GDP is directly proportional to the growth of a Country's economy; this means that the more an economy improved in respect to the last year,

the more start-ups – presumably – will be born in that specific period.

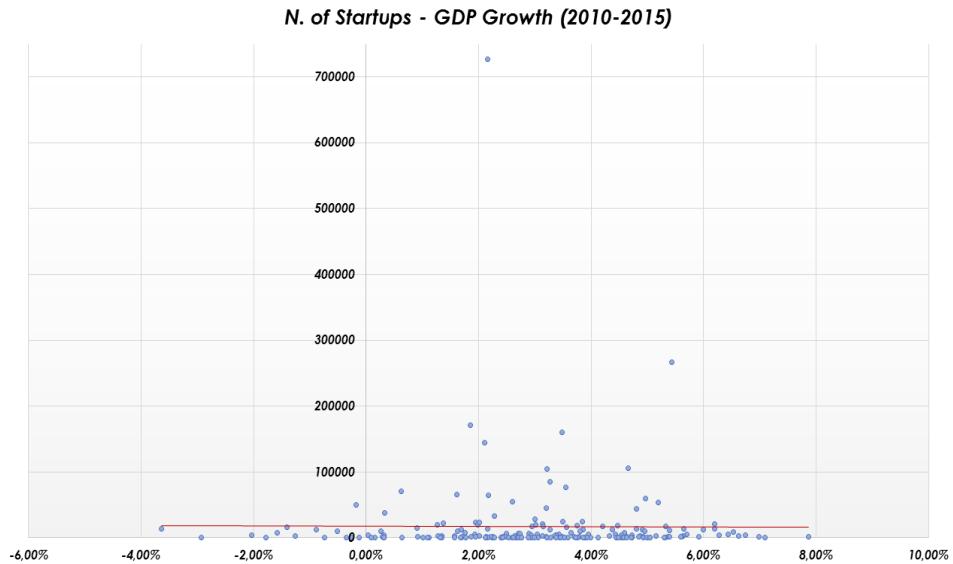


Figure 3 - Number of Startups/GDP Growth Rate; 195 Countries with highest GDPs*; 2010-2015; Personal Processing from U.S. Bureau of Economic Analysis (BEA)*

As results from the graph above, the correlation between GDP* Growth Rate and number of start-ups is, indeed, slightly negative. This result, which doesn't verify the hypothesis, has an interesting interpretation. The fundamental explanation of this is that, in the last 5-10 years, the fastest-growing economies don't still belong to the so-called "Emerging Countries", at least not with the same magnitude.

Countries which have historically been latecomers are becoming the new "emerging" ones (North/Central Africa Countries, South America, Indonesia); they

present steadily-growing GDPs and they're quickly catching up with the booming economies of the last two decades (China, Brazil, India).

Concurrently, while the latter are shifting their focus from raw materials export and manufacturing towards more service-focused systems; the former are strengthening their position in the primary and secondary sectors. Hence, since investment in primary and secondary sectors have a shorter maturing time in comparison with tertiary, we can see how these Countries have higher GDP* Growth Rates than the "traditional" Emerging Countries. The negative correlation here analyzed, thus, should be seen more as a consequence to changing economic condition than as a *status-quo*.

3. "Value-Added" composition:

The Value-Added composition relative to a specific Country is a measure of how much of the GDP is generated by a specific sector. The sectors included in the traditional Value-Added measures – which have also been used here – are:

- I. Agriculture, hunting, forestry, fishing (ISIC A-B);
- II. Mining, Manufacturing, Utilities (ISIC C-E);
- III. Manufacturing (ISIC D);
- IV. Construction (ISIC F);
- V. Wholesale, retail, tourism (ISIC G-H);
- VI. Transport, storage and communication (ISIC I);
- VII. Other Activities (ISIC J-P).

The objective of the analysis of these indicators was finding a correlation between one of the aforementioned sectors and the number of start-ups in a Country. Then, if a correlation was found, it would be used as one of the parameters which compose the proxy (α_c^R) for the number of start-ups in a Country (N_c^d).

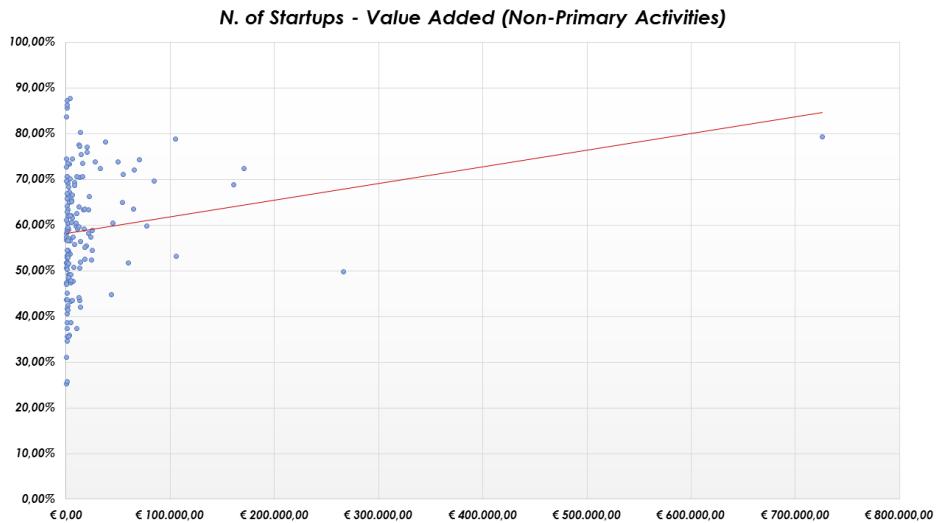


Figure 4 Number of Startups/Value Added Composition; 195 Countries with highest GDPs; 2015; Personal Processing from U.S. Bureau of Economic Analysis (BEA)*

From the graph, it's easily identifiable a quite meaningful correlation between Countries which have their Value Added composed for the biggest part by *non-primary/secondary activities*⁸ and the number of start-ups.

This result can be associated to a number of different factors.

In particular, as a first approximation, it's safe enough to conclude that this result is directly linked to the magnitude of the phenomenon. I.e., in Countries like the United States, which heavily rely on Tertiary activities the number of start-ups is very high; despite this, the US have a robust Primary and Secondary sector

⁸ Construction; Wholesale, retail trade, restaurants and hotels; Transport, storage and communication; Other Activities.

as well. The underlying reasons to this evidence are that the US economy is strong enough to support both a dense ecosystem of start-ups and the primary/secondary sectors. This is not true, at least not in the same magnitude, for countries like Nepal or China where the number of start-ups is more directly correlated with the amount of resources devoted to the tertiary sector. The following Figure (see *Figure 5*) shows the ratio between the primary, secondary and tertiary Economic Sector for the three Countries mentioned before (USA, China and Nepal).

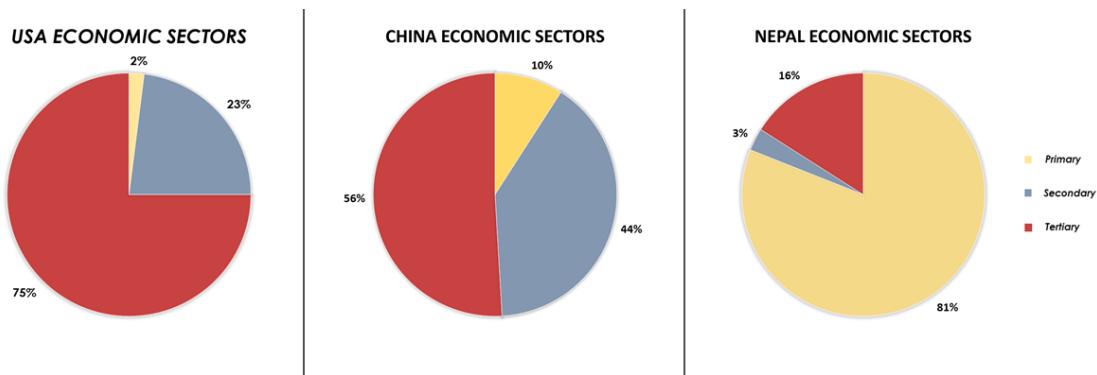


Figure 5 - USA, China and Nepal Economic Sectors Subdivision; 2015; Personal Processing from U.S. Bureau of Economic Analysis (BEA); 2015

To conclude the part concerning Value-Added, it's necessary to clarify that these results should be red in the following way: the number of start-ups increases semi-proportionally with the relative weight of non-

primary/secondary activities on a Country's total Value Added.

- *Formalizing the model:*

The model just described has been used – mainly – for the purpose of giving meaningfulness to data derived from very different sources.

Besides the straightforward formulas used to obtain these database, there's one particular aspect which needs some clarifications. As previously described, the model needed to contain an adequate proxy (α_C^R) for a meaningful "allocation" of the number of startups present in a Region to each Country belonging to that specific Region.

The necessity of building this proxy is clear: Countries within the same geographic region do not present the same characteristics; thus, the number of startups of each Country couldn't simply be obtained by subdividing the total number of startups in a Region by the number of Countries in that Region.

This proxy " α_C^R " has been built using the aforementioned Macro-economic indicators – GDP*; GDP* Growth Rate and Value-Added Composition – as their conjunction represent the most used and meaningful measurement for a Country's economy.

Concluding, " α_C^R " has proved to be a meaningful proxy as the data obtained using it are very close – SD between 5 and 10% - to the average values extrapolated from the other sources. This result demonstrates that when an economic system is heavily services-focused and presents a high GDP, startups find a very positive environment to work in and – consequently – they tend to be more numerous.

2.3 START-UP GEOGRAPHY: A MAP

By following the previously described methodology, two major problems emerged.

The first one was that there were quite profound differences in the actual numbers between one source of data and another. To overcome this obstacle, a technique based on the most used in forecasting practices was adopted. It wouldn't be correct to simply

compute the average between the values – of the number of startups from the different source – because of the “gaps” in the dataset; some sources did not provide data regarding some Countries, other sources did not provide data regarding other Countries. Hence, we assumed that the average difference in the numbers from source to source could be used as a proxy for variability (D) of the measurement and, thus, computed a value which took into account the D itself⁹.

For what concerns the esteems in terms of Macro-Regional values, historic data had also been taken into consideration. After this process, a single value for each Country and Region was obtained, and, then, the number relative to each Macro-Region was allocated to the eight aforementioned Regions¹⁰ (Grant A. & Shaw T. M. (2012)).

The other problem, then, was allocating the Country-Specific values starting from the Macro-Regional data (\bar{N}_R^d). Using the process previously described, we were able to build a dataset comprehensive of 8 measures for each Country (5 from the Country-Specific databases and 3 derived from Macro-Regional data).

This process granted Countries belonging to the same Macro-Regions to have values with some degree of normalization in terms of measurement, and, thus, gave the final graph an internal consistency¹¹.

⁹ a more detailed explanation can be found in the *appendix* of this paper.

¹⁰ BRICS, EU, Middle-East, Oceania, US, Group A., Group B., Group C.

¹¹ a more detailed explanation can be found in the *appendix* of this paper.

Finally, the data were used for creating a color-coded map representing an approximation of start-ups' distribution globally.

From these simple graphs¹² it appears easy enough to depict how the actual distribution of start-ups is not homogeneous at all – even between “similar” Countries.

This, mainly, is due to three factors: the intrinsic cultural differences of each Country, the specific economic and industrial policies set in place by authorities and the Legal differences for what concerns the definition of “Start-up”.

Since this results with respect to the first two variables (culture and policies) are not influenceable in any way, at the end of the next section we will try to make some meaningful examples of how would these esteem change just by adopting a uniform definition about what is – and is not – a start-up.

¹² The graphs in Figure 6 and Figure 7 are constructed as follows. The % number of start-ups is calculated on the total number of start-ups present on the Geographic Region the Country belongs to (*See Section 2.2; Assumptions*). The data were derived from the calculations in this thesis and, as they represent – in a good approximation – the number of startups per Country in 2017.

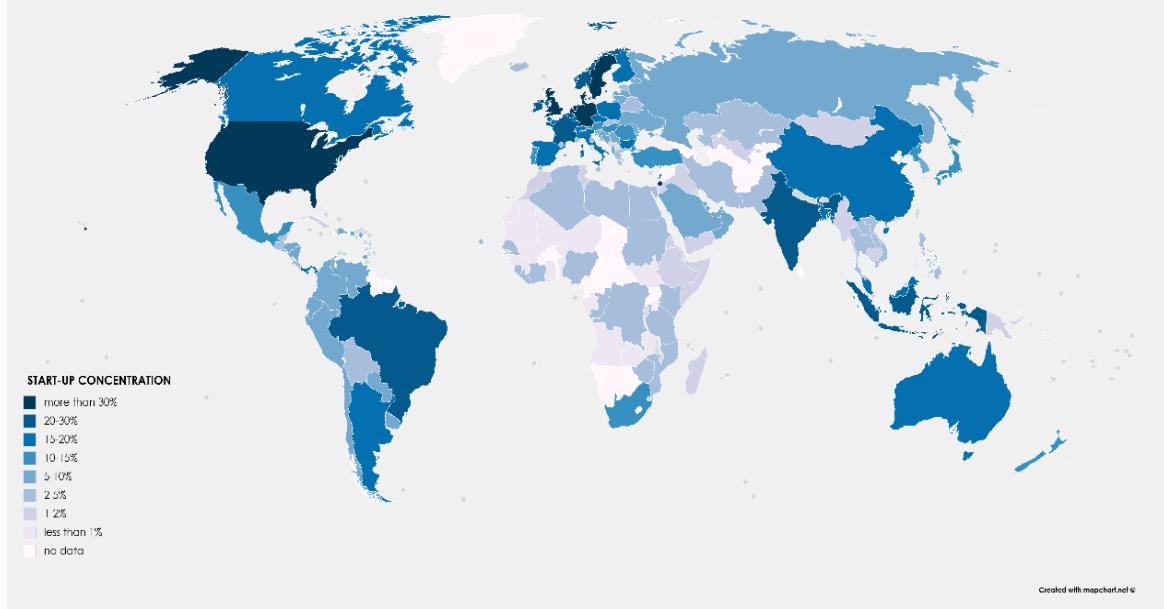


Figure 6 - Global Startups Concentration; 2017; Personal Processing

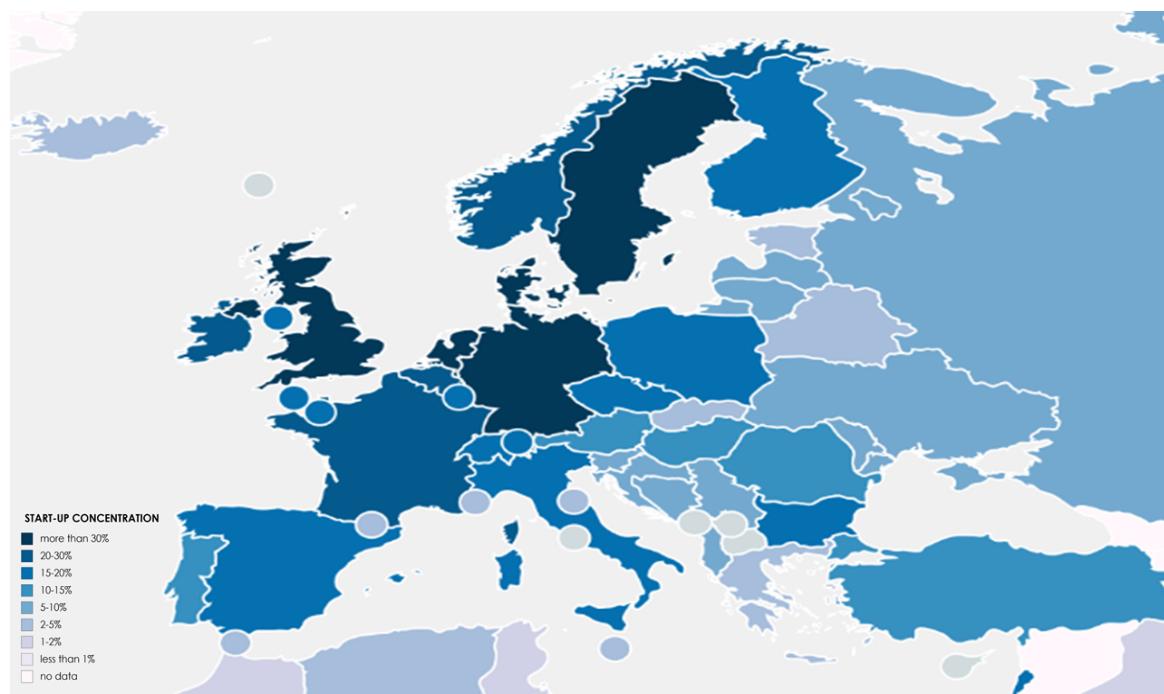


Figure 7 - EU Startups Concentration; 2017; Personal Processing

2.4 COMPARATIVE ANALYSIS

At this point in the research, what could make the conclusions reached until now numerically more interesting would be a comparative analysis. In particular, a comparison between the “Absolute Number of Startups” I previously estimated (N_C^i) and some kind of measure regarding “Startups Density” could lead to interesting results.

The following analysis was driven by the concept of studying the difference in the top-30 Countries for the number of start-ups in absolute terms (N_C^i) and the top-30 in terms of the ratio between the Number of Startups and the Population ($N_{C,p}^i$).

The objective here, was analyzing both the overall differences (and the similitudes) between the two “rankings” and the differences between Countries within the same ranking.

- *Ranking 1 and Ranking 2:*

For what concerns the rankings, the 195 Countries previously analyzed were organized in descending order for what concerns the Number of Startups (Ranking 1), in *Figure*

8, and for the ratio Number of Startups/Population (Ranking 2), in *Figure 9*; the rankings regarding the first 30 Countries for the two dimensions are as follows.

It looks evident that some of the Countries appearing in *Figure 9* may have high scores because of their particularly low population rather than for their number of start-ups. Since 10 Countries out of 30 appear in both rankings, we can quite

| Absolute N. of Startups | N.of Startups/Population |
|-----------------------------|----------------------------------|
| United States | Luxembourg |
| China, People's Republic of | Liechtenstein |
| Japan | Malta |
| Germany | Equatorial Guinea |
| United Kingdom | Bermuda |
| India | Macao SAR, China |
| France | Qatar |
| Canada | Ireland |
| Republic of Korea | Greenland |
| Italy | Tonga |
| Brazil | Barbados |
| Russian Federation | Denmark |
| Saudi Arabia | Norway |
| Australia | Bhutan |
| Turkey | Brunei Darussalam |
| Spain | Switzerland |
| Mexico | Sweden |
| Indonesia | Finland |
| Netherlands | Bahamas |
| Sweden | Singapore |
| Switzerland | Hong Kong SAR, China |
| Nigeria | United Arab Emirates |
| United Arab Emirates | Micronesia (Federated States of) |
| Iran, Islamic Republic of | Dominica |
| Ireland | Canada |
| Argentina | Australia |
| Philippines | Netherlands |
| Poland | United States |
| Denmark | Saint Kitts and Nevis |
| Hong Kong SAR, China | United Kingdom |

Figure 8 - Absolute number of startups (Ranking 1); Personal Processing

Figure 9 - Number of Startups/Population (Ranking 2); Personal Processing

comfortably conclude that in these Countries there are some specific conditions set in place which act as drivers that help fostering the development of startups.

Thus, further analysis was conducted on several Macro-economical indicators, both quantitative and qualitative, for these 10 Countries in order to find some sort of correlation between such indicators and the development of startups in a Country.

Then, the same indicators will be analyzed for the remaining 40 Countries – which don't appear in both rankings – to prove the coherence of the findings and construct a ranking regarding the 50 Countries in analysis representing their “start-up friendliness” in Macro-economical terms.

- *Drivers:*

For what concerns the drivers, the analysis has been concentrated on those which are most commonly taken into consideration when studying a Country's economic system¹³.

In particular, the following analysis had the objective of

¹³ (Rodrik D. (2014): The Past, Present, and Future of Economic Growth; Challenge Journal, Volume 57, Issue 3, Pages 5-39, 2014)

finding a correlation between the presence of startups and the “intensity” of the following drivers: economic policies, high-skilled-labor availability, startup-focused services availability, start-up districts and foreign direct investment (FDI).

Moreover, we tried to identify the importance of each driver on the number of startups in a Country. What follows is a brief description of these drivers in terms of why and how they are important for the development of startups.

1. ECONOMIC POLICIES:

For what concerns “policies”, research was carried on in order to find out if there are some “startup-friendly” policies set in place in each of the Countries in analysis.

For “startup-friendly” policies are here intended measures provided by Policy-Makers which satisfy two specific requirements: first, they recognize and give legal existence to startups; and, second, they are policies studied and developed with the specific aim of boosting start-ups growth.

An aspect worth mentioning is that, since the databases in this study all refer to data relative to 2015, the policies considered are relative to the same period;

although in some cases more up-to-date data could be found, this choice helps keeping a stable consistency throughout the all research. Results are shown in *Figure 10*.

| COUNTRY | STARTUP-FRIENDLY POLICIES |
|---------|---------------------------|
| USA | 75 |
| UK | 75 |
| CAN | 50 |
| AUS | 50 |
| NL | 100 |
| SWE | 75 |
| SWI | 0 |
| UAE | 25 |
| IRE | 50 |
| DEN | 25 |

*Figure 10 – Startup-Friendly Policies;
Personal Processing*

2. LABOR AVAILABILITY:

According to Unger J. M. et. Al. (2011), qualified labor always plays a central role in a company's success. Since it is almost impossible to formalize all the competencies which make employees more (or less) suitable for working in a start-up; what was taken into consideration were specific-education-programs as an indicator for analyzing Human capital.

The concept beyond this decision is that, presumably, if in a Country there are education programs with focus

on start-ups and entrepreneurship there would be, likely, more specialized labor available for working in start-ups. This, ultimately, would act as a virtuous process in which more startups call for more labor and more students attending these specific programs boost the availability and the efficiency of such programs in return. Applying this theory to the cases in our study, we analyzed if in each one of the Countries under investigation is there have been higher-education programs specifically designed towards the development of entrepreneurial skills. In particular, the focus was on the existence of University Degrees focused on startups and entrepreneurship.

Results are shown in *Figure 11*:

| COUNTRY | EDUCATION PROGRAMMS |
|---------|---------------------|
| USA | 50 |
| UK | 100 |
| CAN | 50 |
| AUS | 75 |
| NL | 75 |
| SWE | 75 |
| SWI | 50 |
| UAE | 0 |
| IRE | 25 |
| DEN | 50 |

*Figure 11 – Education Programs Presence;
Personal Processing*

3. SERVICES AVAILABILITY:

For what concerns “Services Availability” some preliminary assumptions have to be made. It is widely recognized, as Eichengreen B. & Gupta P. (2013) underlined, that the services-sector share of output and the major indicators of wealth in a Country (such as pro-capita GDP) have a strong positive correlation.

The problem is that what is missing is a more restrict relationship; we need to understand which services positively correlate with start-up presence. Fortunately, the academic literature on this topic is quite rich. As Dent et. Al. (2016) pointed out, we should define which kind of services boost the development of which kind of company; and, in particular, we want to know it about start-ups. What resulted from their study, in brief, is that since the majority of successful startups operate in the services sector, the kind of professional services start-ups themselves need are “generic” ones (hi-speed Internet, IT-support, Co-working spaces, “Accelerating” programs, Financial services, etc.).

This being said, “Professional Services Availability” was studied in the Countries in analysis and was

assumed that the coverage of such services should be widespread enough. Results are shown in *Figure 12*.

| COUNTRY | SERVICES AVAILABILITY |
|---------|-----------------------|
| USA | 75 |
| UK | 100 |
| CAN | 75 |
| AUS | 50 |
| NL | 75 |
| SWE | 50 |
| SWI | 25 |
| UAE | 50 |
| IRE | 75 |
| DEN | 0 |

*Figure 12 – Professional Services Availability;
Personal Processing*

4. START-UP DISTRICTS:

Districts are one of the most peculiar forms of economic environment; they have had huge attention by the academic community for decades and they still are a quite important topic of studies. One of the most regarded analysis on the topic belongs to the Italian professor Becattini G. which analyzed industrial districts as a mix of two essential factors: “a population of firms and a community of people” (Becattini G. (1990)). When we think about start-ups, is almost impossible not thinking about Silicon Valley, the most important and most famous district for hi-tech, global

start-ups; despite being considered as a sort of “Promised Land” for start-ups, it is far from being the only place start-up districts found their optimal environment to grow and develop. Indeed, start-up districts started to arise – or, better, to be noticed – not more than a decade ago; they have solid presence in several Countries and, as Davis A. B., (2015) says, they are continuing to grow steadily all around the World.

The aim of this analysis was to identify the presence of well-established start-up districts in the Countries of the study; the main objective was understanding if the presence of districts could be correlated with a solid start-up presence in the aforementioned Countries.

Results are shown in *Figure 13*:

| COUNTRY | START-UP DISTRICTS |
|---------|--------------------|
| USA | 100 |
| UK | 75 |
| CAN | 25 |
| AUS | 50 |
| NL | 75 |
| SWE | 100 |
| SWI | 25 |
| UAE | 0 |
| IRE | 50 |
| DEN | 25 |

*Figure 13 – Startups Districts Presence;
Personal Processing*

5. Foreign Direct Investment (FDI):

One of the characteristics which differentiate start-ups from SMEs is, undoubtedly, their global scope: start-ups have no geographical boundaries, they don't necessarily need proximity to their customers to be successful. Among the consequences of being non-bounded to a specific Country is that both customers and investment can be reached in a wider market; this, according to Doytch N. (2016), is why FDI is so important to startups. According to Grazia Ietto-Gillies (2012), instead, the reasons behind FDI were explained by neoclassical economics based on macro-economic principles, in particular trade and offshoring. A foreign direct investment (FDI) is, thus, an "investment in the form of a controlling ownership in a business in one Country by an entity based in another Country". The role of FDI for start-ups development is, thus, crucial: having the possibility to find financing not only inside their Home-Countries but also from investments on a Global makes it more likely to be successful or, at least, it greatly increases the odds. Results about FDI are shown in *Figure 14*.

What makes the analysis of these drivers crucial for this study is understanding their direct impact on the number of startups present in a Country. Hence, the next section (*See Sections 2.5 and 2.6*) will explain how these drivers were linked together in order to be used as a ranking tool.

| COUNTRY | FDI (2015) |
|---------|-------------------|
| USA | € 379.434.000.000 |
| UK | € 150.438.642.479 |
| CAN | € 55.685.384.262 |
| AUS | € 38.639.152.153 |
| NL | € 101.789.068.412 |
| SWE | € 76.681.575.607 |
| SWI | € 119.713.934.409 |
| UAE | € 40.975.829.700 |
| IRE | € 203.463.366.382 |
| DEN | € 1.671.053.327 |

*Figure 14 – Foreign Direct Investment (2015);
Personal Processing*

2.5 MULTI-CRITERIA DECISION ANALYSIS

Once the single drivers had been analyzed, they were merged together – taking into consideration also the N. of Startups previously estimated – in order obtain a Country ranking for their “startup

friendliness". Since this ranking entailed linking both quantitative and qualitative data (see *Figure 15*), a mathematical methodology was applied in order to make data more comfortable to work with.

| COUNTRY | STARTUP-FRIENDLY POLICIES | EDUCATION PROGRAMMS | SERVICES AVAILABILITY | START-UP DISTRICTS | FDI (2015) |
|---------|---------------------------|---------------------|-----------------------|--------------------|-------------------|
| USA | 75 | 50 | 75 | 100 | € 379.434.000.000 |
| UK | 75 | 100 | 100 | 75 | € 150.438.642.479 |
| CAN | 50 | 50 | 75 | 25 | € 55.685.384.262 |
| AUS | 50 | 50 | 50 | 50 | € 38.639.152.153 |
| NL | 100 | 75 | 75 | 75 | € 101.789.068.412 |
| SWE | 75 | 75 | 50 | 100 | € 76.681.575.607 |
| SWI | 0 | 50 | 25 | 25 | € 119.713.934.409 |
| UAE | 0 | 0 | 50 | 0 | € 40.975.829.700 |
| IRE | 50 | 25 | 75 | 50 | € 203.463.366.382 |
| DEN | 25 | 50 | 0 | 25 | € 1.671.053.327 |

Figure 15 – Drivers Table for the Top-10 Countries in relation to the Absolute Number of Startups and the Number of Startups/Population; Personal Processing

In *Figure 16* we can depict the ranking of the Top-10 Countries organized for their "Startup Friendliness".

| COUNTRY | RANKING | SUBGRUP |
|---------|---------|---------|
| USA | 83 | HIGH |
| UK | 68 | HIGH |
| NL | 59 | HIGH |
| SWE | 54 | HIGH |
| IRE | 42 | MEDIUM |
| AUS | 40 | MEDIUM |
| CAN | 37 | MEDIUM |
| SWI | 22 | LOW |
| DEN | 17 | LOW |
| UAE | 14 | LOW |

Figure 16 – Top-10 Countries for Startup Friendliness; Personal Processing

This result appears to be extremely meaningful as it defines a strong correlation between the variables considered until now and the number of startups present in a Country “ \bar{N}_c ” previously estimated (*See Section 2.1*).

More than that, it proves the congruence of the variables analyzed, as well as the accuracy of the Macro-Economical study itself.

As these results appeared quite interesting, this analysis was enlarged to the whole sample of the “Top-50” Countries – those appearing at least one time in the two “Top-30” Rankings. These Countries also represent a sort of Top-25% of the 195-Countries-sample we considered at the beginning of this study. In particular, a multiple-criteria decision analysis (MCDA) was adopted; which is a methodology in which we try to explicitly evaluate multiple conflicting criteria in order to obtain a meaningful “optimal” solution. The peculiarity of MCDA “SMART” analysis is that it makes possible to work with both qualitative and quantitative data on the same level without the need of complex formulas. The purpose of this, quite known, methodology is, indeed, to support decision-makers facing problems in which criteria are of different nature. As, typically, there does not exist a unique optimal solution for such problems, it often becomes necessary to use decision-maker’s preferences (weights) to differentiate between solutions. In the remaining of this paragraph will broadly be explained the methodology; however, since this method will

be further applied forward in this study, it will be described more accurately in the sections to come. In brief, weights were assigned to each criterion (policies, education, services, districts, FDI, n. of startups) and the criteria were then rescaled with a *linear interpolation*¹⁴ in order to obtain values with the same magnitude (scaled 0-100, with 0 the worst and 100 the best). Then, a ranking was for each Country (alternatives) as the sum of the criteria belonging to an alternative weighted for its relative “weight”. Specifically, were considered two typologies of measures.

The first typology refers to “ON/OFF measures” which were used for the qualitative data; they are basically measures to which was assigned either a value of 0 (no presence), 25 (low presence), 50 (medium presence), 75 (high presence) or 100 (widespread presence). Although this may not be extremely precise if we consider just one criterion, it becomes meaningful to the construction of the final result.

The other typology of measures used for the final ranking were “Numerical measures”; these measures had to be rescaled through some kind of interpolation in order to have values ranging from 0 to 100 (*a logarithmic interpolation was adopted because of the impact the “outlier values” had on the ranking. Since the best alternatives had to have a value of 100 and the worst of 0, with a linear interpolation a

¹⁴ In mathematics, *linear interpolation* is a method of curve fitting using linear polynomials to construct new data points within the range of a discrete set of known data points.

couple of alternatives would have scored very high and all the remaining ones just from 0 to 10).

The following formula was used to interpolate the values and construct the final ranking:

$$RANK = 100 \cdot \log\left(\frac{x - x_{worst}}{x_{best} - x_{worst}}\right)$$

2.6 A MACRO-ECONOMIC RANKING

It is worth mentioning that the results obtained with such process (shown in *Figure 1.7*) do not represent in any way the “best” – or the “worst” – Country.

| RANKING | COUNTRY | SCORES | SUB-GROUP | | | |
|---------|---------------------------|--------|-----------|--|--|--|
| 1 | United States | 100,00 | HIGH | | | |
| 2 | China, People's Republic | 63,24 | HIGH | | | |
| 3 | Hong Kong SAR, China | 62,76 | HIGH | | | |
| 4 | Germany | 58,84 | HIGH | | | |
| 5 | United Kingdom | 58,56 | HIGH | | | |
| 6 | Netherlands | 58,24 | HIGH | | | |
| 7 | Australia | 54,71 | HIGH | | | |
| 8 | Sweden | 52,51 | HIGH | | | |
| 9 | Ireland | 51,87 | HIGH | | | |
| 10 | Canada | 44,34 | HIGH | | | |
| 11 | France | 43,69 | HIGH | | | |
| 12 | Singapore | 42,59 | HIGH | | | |
| 13 | Spain | 41,16 | HIGH | | | |
| 14 | Italy | 41,07 | HIGH | | | |
| 15 | Finland | 39,46 | HIGH | | | |
| 16 | Argentina | 39,34 | HIGH | | | |
| 17 | Qatar | 38,30 | MEDIUM | | | |
| 18 | Norway | 38,12 | MEDIUM | | | |
| 19 | Switzerland | 34,05 | MEDIUM | | | |
| 20 | Brazil | 32,44 | MEDIUM | | | |
| 21 | India | 31,80 | MEDIUM | | | |
| 22 | Mexico | 28,93 | MEDIUM | | | |
| 23 | Turkey | 28,26 | MEDIUM | | | |
| 24 | Russian Federation | 27,95 | MEDIUM | | | |
| 25 | Saudi Arabia | 27,88 | MEDIUM | | | |
| 26 | Luxembourg | 27,04 | MEDIUM | | | |
| 27 | Poland | 26,95 | MEDIUM | | | |
| 28 | Iran, Islamic Republic of | 26,26 | MEDIUM | | | |
| 29 | Denmark | 26,10 | MEDIUM | | | |
| 30 | Hong Kong SAR, China | 25,26 | MEDIUM | | | |
| 31 | Japan | 18,68 | MEDIUM | | | |
| 32 | Republic of Korea | 15,79 | MEDIUM | | | |
| 33 | United Arab Emirates | 14,37 | MEDIUM | | | |
| 34 | Philippines | 13,91 | LOW | | | |
| 35 | Nigeria | 13,87 | LOW | | | |
| 36 | Macao SAR, China | 12,94 | LOW | | | |
| 37 | Brunei Darussalam | 12,85 | LOW | | | |
| 38 | Bahamas | 12,84 | LOW | | | |
| 39 | Liechtenstein | 12,82 | LOW | | | |
| 40 | Bhutan | 12,80 | LOW | | | |
| 41 | Bermuda | 12,80 | LOW | | | |
| 42 | Indonesia | 3,10 | LOW | | | |
| 43 | Malta | 0,48 | LOW | | | |
| 44 | Equatorial Guinea | 0,35 | LOW | | | |
| 45 | Barbados | 0,35 | LOW | | | |
| 46 | Saint Kitts and Nevis | 0,30 | LOW | | | |
| 47 | Greenland | 0,30 | LOW | | | |
| 48 | Dominica | 0,30 | LOW | | | |
| 49 | Tonga | 0,30 | LOW | | | |
| 50 | Micronesia | 0,29 | LOW | | | |

Figure 17 – Top-50 Countries for Startup Friendliness Ranking; Personal Processing

They simply state that, given the criteria analyzed and the relative weights – which were discretionary assigned to them –, the alternatives under exam obtained the following scores.

This first result allowed for a further split of this “Top-25%” group into three subcategories relative to their “startup-friendliness”: High, Medium, Low. This subdivision was made taking into consideration not only the overall score of each Country, but also the single scores for each criterion analyzed; these observations were then coupled with some specific research on the Countries which represent “break-points” from one category to another.

This section, focused on Macro-economic variables, will be used further in the research in order to extrapolate meaningful parameters which will, then, be used to build a framework to analyze a startup’s probability of success. Since both qualitative and quantitative data will be needed – both Macro-economic and Microeconomic data as well as a solid theoretical framework – the research will now focus on trying to tackle the theoretic part of the work and will, thus, concentrate on the more “practical” sections only after having established a solid theoretical basis.

2.7 CONCLUSIONS

To conclude, it's worth noticing how this last section covers a critical role within the entire study.

Apart from the numerical results per-se – which will be further used in this project – what really appeared crucial to define was the methodology that has been applied. The “*objective approach*” to the fundamental topics that has been carried on in the previous sections has also been used throughout the whole study.

Moreover, the section just concluded represents the first of the four topics that will be covered in this thesis (*See Section II*); in particular, it referred to the “Macroeconomic Analysis”.

The fundamental objective of this part, hence, was defining a number of Macro-indicators which, in particular, boosted the development and, consequently, the presence of startups in specific Countries.

These indicators will, then, be connected to both the Theoretical and the Micro-economical part of the study in order to build the final model.

As far as results are concerned, it's interesting to note how the presence of startups in a Country is strongly correlated with the

indicators analyzed. In particular, *dynamic economies*¹⁵ appeared to present the optimal Macroeconomic conditions for fostering a widespread development of startups.

Results from the previous analysis will be integrated with Microeconomic data as well as with the theoretical analysis that will be carried on in the next sections in order to be used as corner stones of the final model.

Now that the magnitude of the topic has been broadly defined, in the next section the focus will be on trying to answer to the fundamental question:

“What is a start-up?”

¹⁵ We call “dynamic economies” those presenting the following characteristics: population growth, quantity of capital growth – yearly –, modes of production improve; industrial institutions undergoing changes – where inefficient organizations are replaced by efficient ones –, habits of the people, fashions and customs change, as wants of the people increase).

3. THEORETICAL FRAMEWORK

The following section focuses on the theoretical framework which has been used as basis for this project.

In particular, in Chapter 3.1 will be developed a definition of startup which generates from a mix of Quantitative attributes (both Micro and Macro-economical) and Qualitative ones.

Chapter 3.2 will be devoted to analyzing the typical business model of startups as well as the phase of investment, with a comparison between to most used means for raising capital.

Finally, Chapter 3.3 will focus on the typical startup phases, analyzing the classical lifecycle of startups and underlining the major threats and opportunities in each phase.

Data and parameters which have been built in this section will then be used for constructing the final model.

3.1 WHAT IS A STARTUP: AN OVERVIEW OVER COLLIDING DEFINITIONS

The first step to define what startups are, would be analyzing how the economic and legal systems define and treat them. Indeed, it appears that what really sets the difference between what is and is not startup, is represented by the legal “requirements” a company has to meet in order to be categorized as such.

However, this doesn't take over the need for a more comprehensive and – in some way – universal definition as laws have a huge degree of variation between States due to culture, history, religion, politics and a number of other variables. Just to bring a clarifying example, I am going to compare two quite different sets of legal requirements for being a start-up from two Countries which can be considered quite similar in relation to what Vernon R. & Wells Jr. L.T., (1991) defined the *Economic Environment*: Italy and Spain.

These two Countries were chosen for four main reasons:

- a. They are both part of the EU and, as members, they should follow the same directives;
- b. They present a very similar degree of “number of total SMEs (% of total number of enterprises)” as shown in Figure 18, 19, 20:

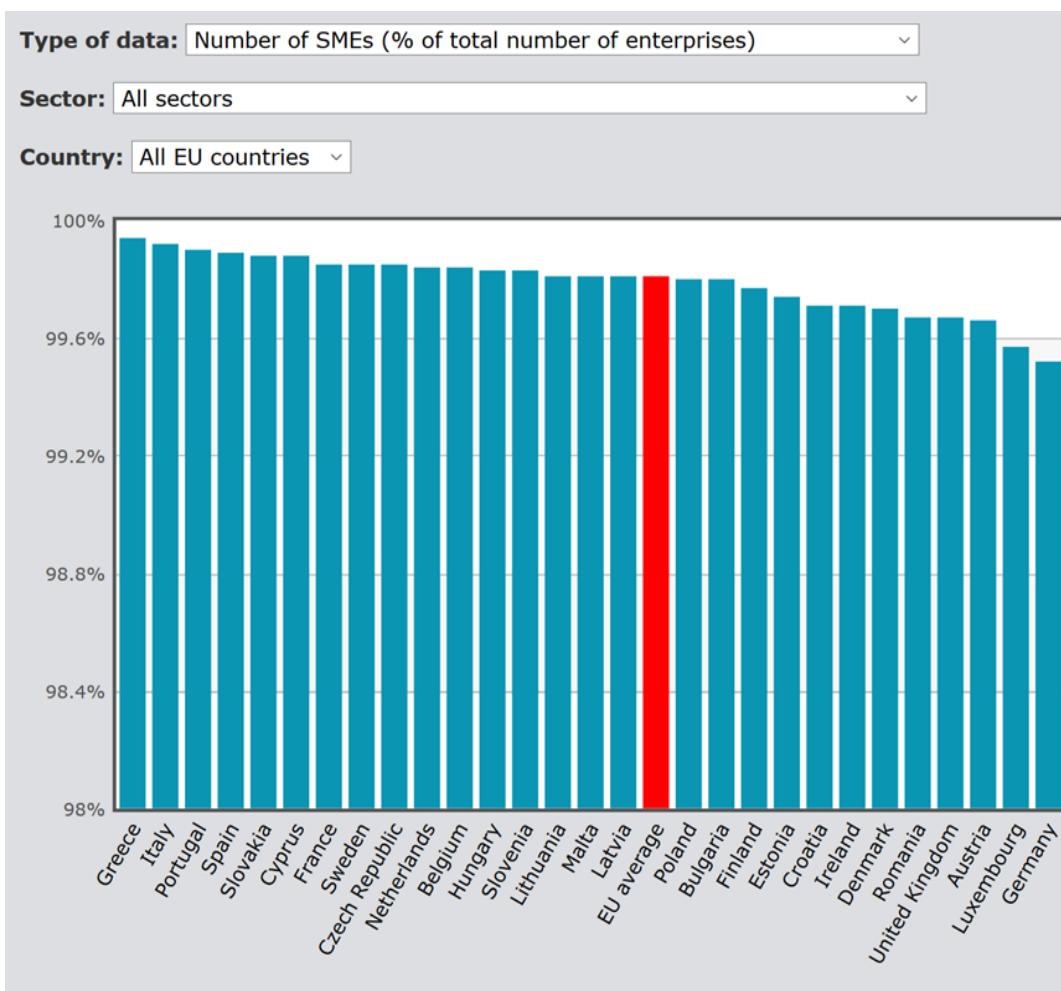


Figure 18 – Total % of SMEs (on total number of enterprises); All sectors; Europe; EUROSTAT; 2015



Figure 19-20 - number of total SMEs (% of total number of enterprises); All sectors; Spain-Italy; EUROSTAT; 2015

- a) They present a very similar degree of “*number of people employed (% of total number of enterprises)*” as shown in *Figure 21, 22, 23*:

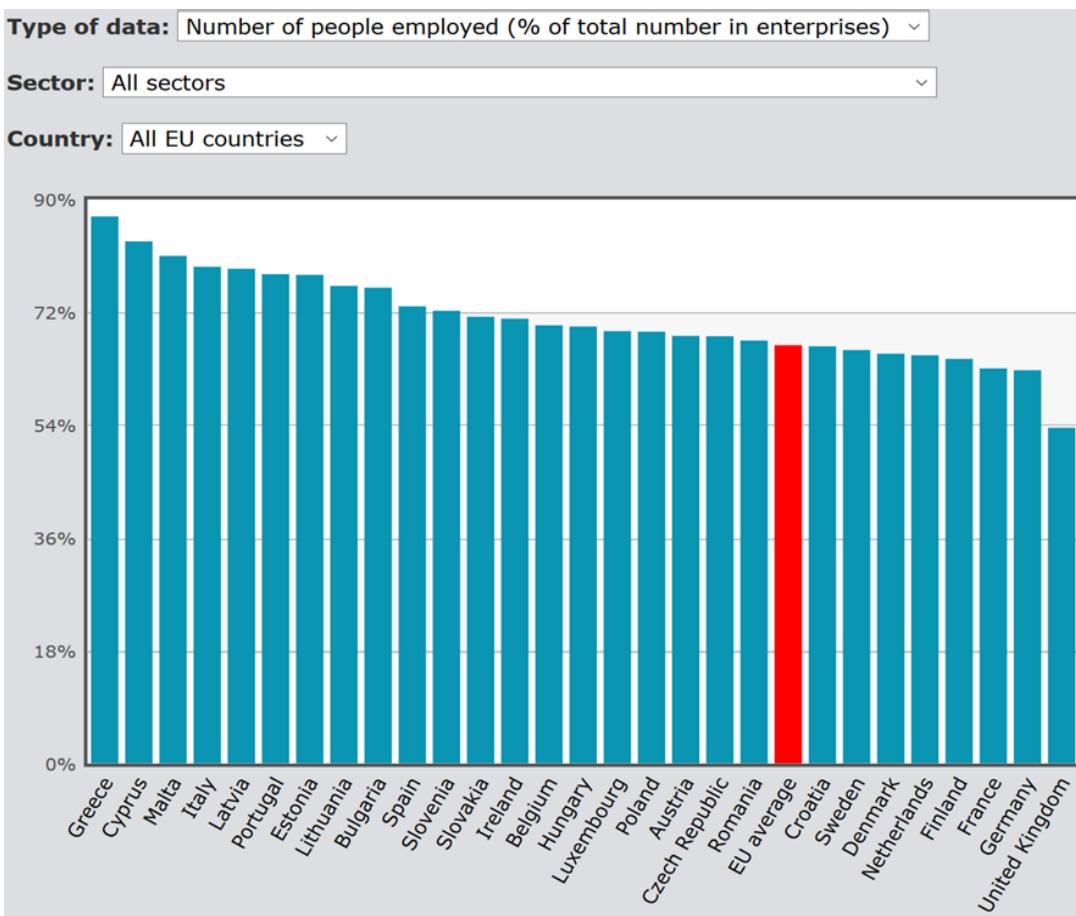


Figure 21 - *number of people employed by SMEs (as % of total number of enterprises); All sectors, Europe; EUROSTAT; 2015*

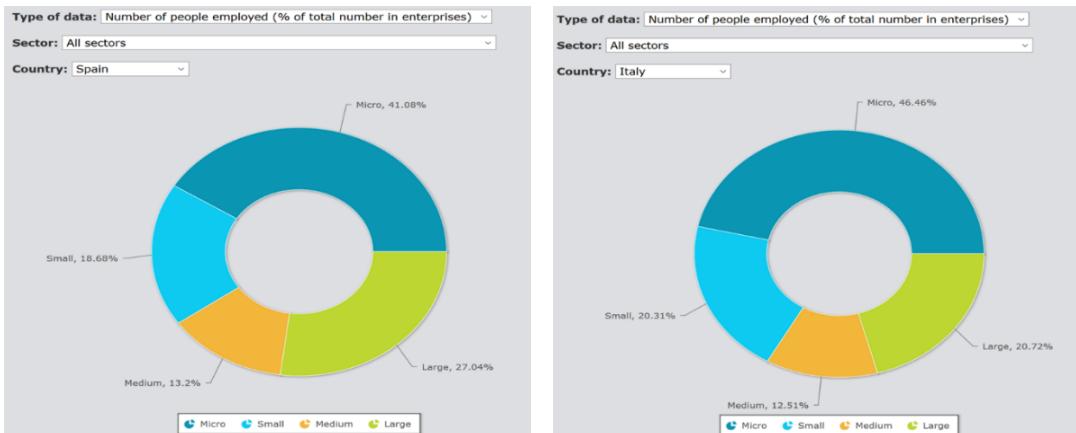


Figure 22-23 - *number of people employed (as % of total number of enterprises); All sectors, Spain-Italy; EUROSTAT; 2015*

d) I have a direct experience of both working and living in both of these Countries.

- ITALY:

The definition here analyzed, from "*Restart Italia!*", is: "All those companies, resident or subject to taxation in Italy, which meet the following criteria:

1. *Ownership*: held directly and, at least, 51% by individuals;
2. *Activity*: Engaged in business activities within the last 48 months;
3. *Turnover*: less than 5 Million Euro;
4. *Finance*: They do not distribute profits;
5. *Objective*: Development of innovative products or services for profit;
6. *Accounting*: Transparent, simplified accounting balance."

Having such a precise definition set in place has some obvious advantages.

First of all, it represents the first step a Country must take in order to help a phenomenon grow. It substantially entails that a State acknowledges the existence and gives relevance to a specific event – in this particular case, startups – and that it lays the

foundations for future work which will encourage (or discourage) such phenomenon.

Evidence demonstrates that another big advantage of regulating new “trends” is that individuals which are interested in that topic will start being more involved with it and, as a consequence, the buzz surrounding it will make the phenomenon itself grow.

For instance, the next graph (*Figure 24*) shows the ratio between the number of SMEs and startups in Italy before and after the legal definition of startups was given in 2012:

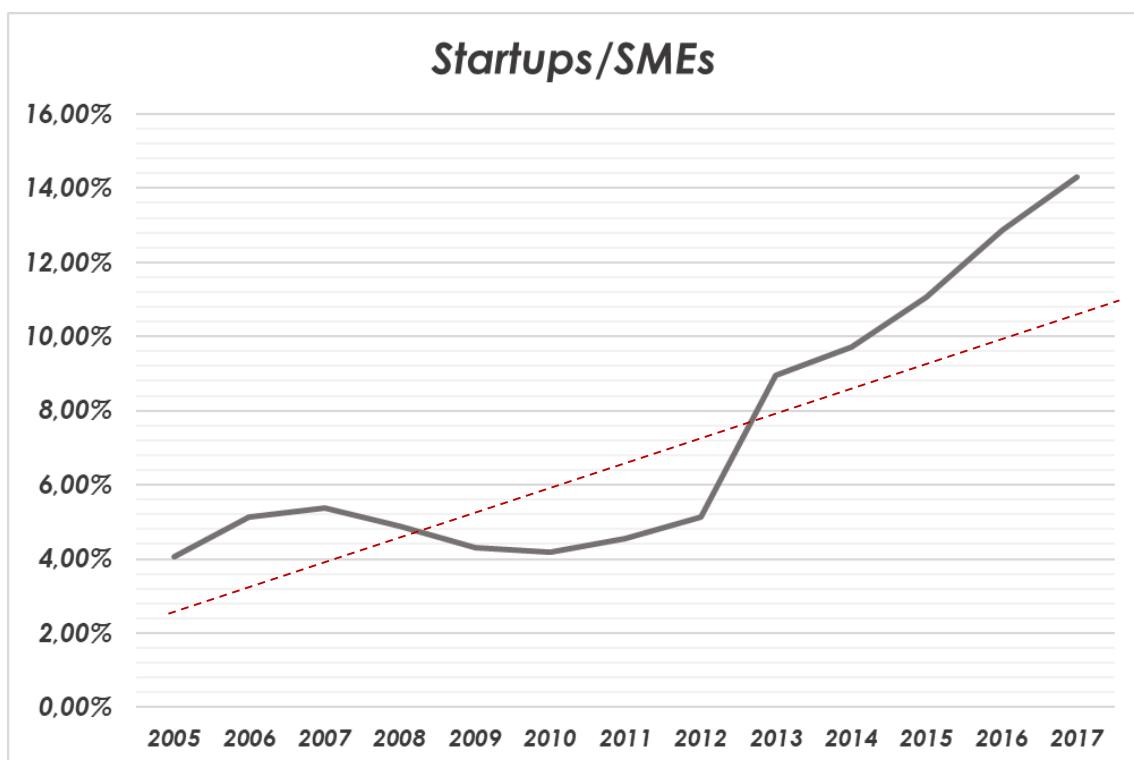


Figure 24 – Number of Startup/Number of SMEs; Italy; 2005-2017; Personal Processing

As we can depict from *Figure 24*, the introduction of a legal definition coincides with a steep increase of the ratio; in particular,

since 2012, the number of active startups in Italy has grown by a remarkable 311,4%.

This data can be explained with the concurrence of two main factors. First, after the introduction of the definition, a number of SMEs effectively decided to change their legal status to startup; this is the main reason why the peak of growth is concentrated between 2012 and 2013.

The second factor, however, is represented by the fact that – after 2012 – a number of businesses were created directly as startups rather than as SMEs and, therefore, foreign investment in activities tightly related to startups also increased drastically.

Just to mention a couple of examples, two of the most known startup companies of this period – Flixbus and Uber – started operating in Italy in that period.

Having such a “strict” definition, though, doesn’t come without downsides.

The most relevant being the fact that – in some ways – it incentivizes businesses to “act” as startups even when they clearly do not belong to such category.

Furthermore, it hinders the adoption of a commonly-shared definition between different Countries which, fundamentally, would be necessary for a healthy ecosystem to develop and flourish.

- SPAIN:

For what concerns Spain, though, it appears that a legal definition about startups is still missing at this stage.

This legislative “gap” is not to be underestimated, as it represents the major driver for a series of more complex and – potentially – harmful situations.

In particular, there are two distinct consequences: one which can be defined as “legal” while the other is merely “economical”.

From a juridical point of view, the absence of a clear and binding system which defines rights and duties, constraints and responsibilities, grants a virtually endless freedom of action to the legal actors not submitted to such system.

This means that a legal entity which is, actually, a startup, may take advantage of not being regulated as such by acting as a totally different legal entity; or, on the other side, it may even be harmed by being regulated as a SME.

Then, there’s the merely economical aspect to this. Dozens of studies demonstrate how the presence of a well-developed startup ecosystem within a Country acts as an accelerator for the general economy of that specific Country, as we can depict from the next graph (*Figure 25*).

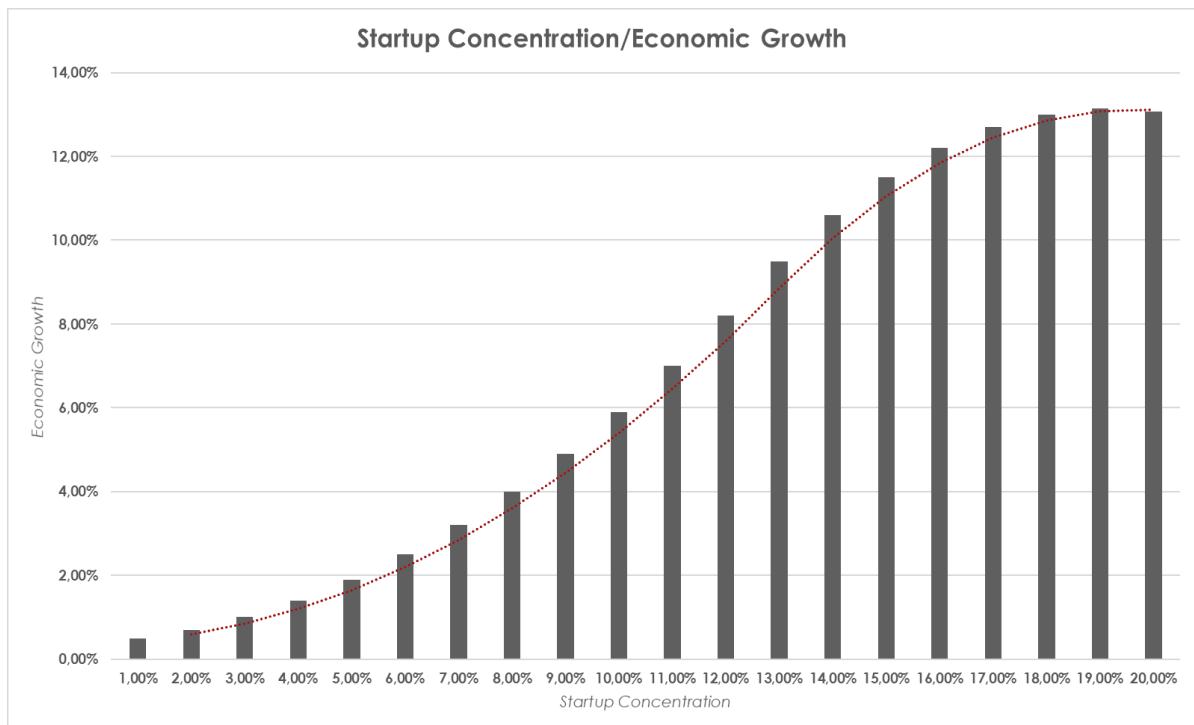


Figure 25 – Startup Concentration/Economic Growth; Eurostat; 2015 Personal Processing

This appears to be particularly true in moments of general “bad economical climate”.

The lack of regulation for a single phenomenon – say startups – may hence have unpredictable outcomes for the whole economic system of a Country.

Thus, it appears essential to have – at least – a minimum degree of legal regulation set in place in order to overcome the aforementioned scenarios.

Considering this issue from a wider perspective, there's also a more general consequence to be aware of.

These differences in the regulation of a phenomenon across different juridical systems nourishes a fundamental problem of

consistency. Indeed, if every Country holds on to its own definition of startup – or if they simply do not implement one – a startup may be considered such in that Country but, concurrently, may be also considered a SME somewhere else. This is particularly dangerous as it may inhibit policy-makers to take action in startup-friendly initiatives and, to an extreme, it may prevent virtuous economic cycles to even take place.

To conclude, there's a last problem which relates to the lack of objectivity that arises from the concurrent presence of multiple and extremely diverse definitions about the same phenomenon.

As discussed previously (*See Section 1.1*), this non-objective approach – which we refer to as objectivity dilemma – acts as a major drawback in developing a consistent framework of policies on start-up regulation. In particular, this is the main reason why the first objective of this thesis is giving a final and consistent definition of “start-up”.

3.1.1 VISION, NEWNESS, UNCERTAINTY

Sticking to the main academic literature, a startup is considered a “new” methodology used to develop businesses and products.

This concept builds on the antithesis between how business used to operate in the last 20-30 years and how companies of the last decade operate. The main differences are, roughly, related to the starting “dimension” of the firms, the role of cutting-edge technologies, the ways of financing and, lastly, the approach to customers.

One of the foremost relevant academic studies on startups is represented by Eric Ries’ “Lean Startup Methodology” (2008); where he explained, starting from his own personal experience, how by adopting a sort of “scientific-experiments method” startups could reduce the – typically very high – market risk and work around the huge problem represented by early financial needs. Thanks to the popularity of his bestselling book, *The Lean Startup*, published in 2011, his method became, and still is, a sort of “Bible” for a great number of startups all around the world.

According to Ries E. (2011), thus, “a startup is a human institution designed to create a new product or service under conditions of extreme uncertainty”. From this brief definition, it can be depicted that, for the author, the main characteristics which define a start-up are a mix of three main aspects.

First, a sort of human-related peculiarity which, in this thesis, will be called "*Vision*". This subject has already received great attention in the academic literature, in particular by Kolk A. (2010), with reference to classic examples of successful businesses.

Ries himself underlines how "[...] fast iteration and customer insight, a huge *vision*, and great ambition [...]" are among the most important characteristics for his methodology. What the "*vision*" represents, in a nutshell, is the human factor which makes companies different from one another. It is the starting idea and the future idea of the product/service provided, the talent behind each employee, the charisma of the leader, the link of personal relations between co-workers. All these aspects concur in creating what shapes the real competitive advantage of a company over others, advantage which, according to Shilling M. A. (2012), must be tacit, unique and, thus, hard to replicate.

The second aspect is represented by "new product or service". This is the aspect which is most widely associated to start-ups: "*Newness*".

In the last 20 years, as Yeo W. et. Al. (2015) points out, the pace of technological innovations¹⁶ has increased enormously (See *Figure 26*).

¹⁶ See in appendix: How to measure the degree of technological innovation.

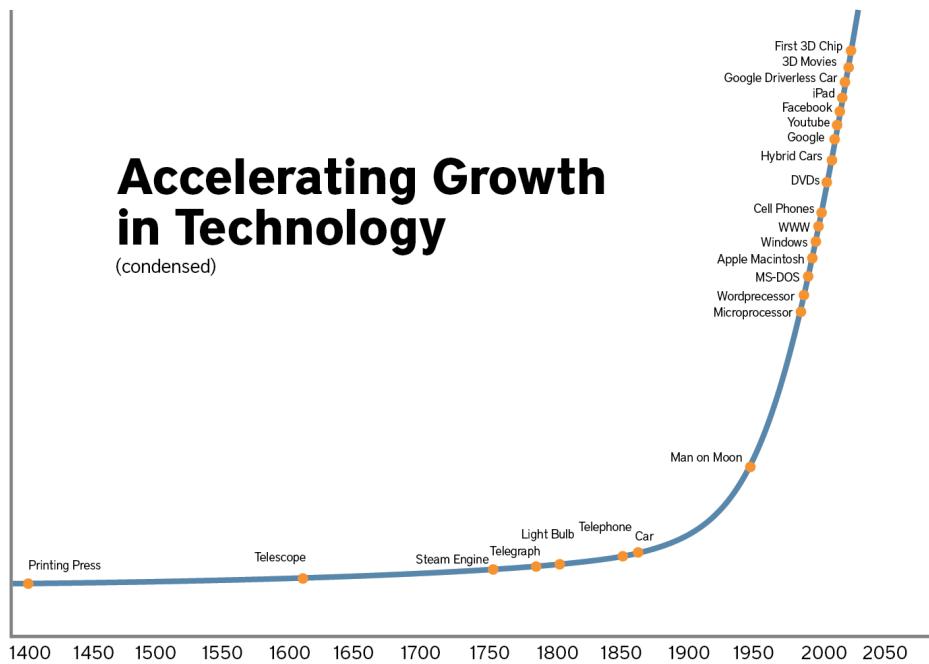


Figure 26 – Acceleration in Technology Growth; 1400-2017; Asgard Capital

If we consider data between 1990-2015, moreover, the number of startups has grown almost simultaneously with the pace of technological innovations (See Figure 27).

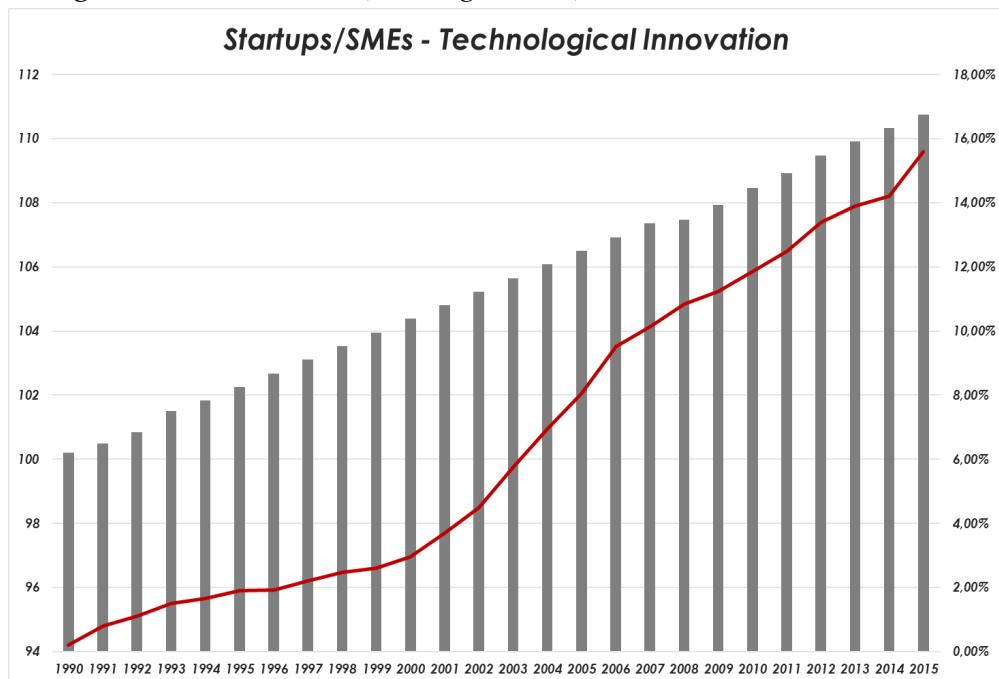


Figure 27 – Startups/SMEs VS Technological Innovation; US Bureau of Economics; 1990-2015; Personal Processing

However, it is actually quite interesting to note that, even if the number of start-up increased at, almost, the same rate of “main” technological innovations, the ratio between technological-focused start-ups and the total number of start-ups is quite lower than what one would think.

Indeed, in the last 25 years – despite huge improvements in technology – the ratio between tech-startups and other “non-tech” startups has been rather stable: 65% of startups are tech-focused while 35% are not. Moreover, in the last 5 years the ratio has been slowly but steadily changing in favor of non-tech startups which – according to the US Bureau of Economics – now account for up to the 45,4% of the total.

The point is that, as Ghemawat P., (2007) points out, real facts and data are quite different from “presumptions”. These results, nevertheless, appear particularly interesting as they disclaim one of the biggest *clichés* about startups which is the common idea that they are, basically, tech-focused SMEs.

Therefore, the “*Newness*” related to a startup not only represents how “distant” the product/service is from what already exists in the marketplace in terms of technology, but also in terms of customer base, founding strategy or business model.

Finally, the third aspect to enucleate from Ries’ manifesto is related to the “*Uncertainty*”. Startups – typically – operate in non-traditional ways, creating new products (which sometimes seem

useless), getting crowdfunded (which still seems to some old-school brokers like panhandling), start in garages (this is more a cliché than an actual fact, but still). These above are actually quite unprecise statements; what is real about them, though, is the uncertainty they transmit. Yes, start-ups operate in an environment which is so uncertain that the majority of companies wouldn't dare to step into.

This is precisely the reason why start-up have a chance in competing with huge companies, they are what Schumpeter J. (1942) would have called the "creative destruction", what Christensen C. (1997) or Lepore J. (2014) would call "disruptive businesses", they are the organization of factors in a chaotic medium, and they work (at least some of them).

Hence, the concepts highlighted by Ries – Vision, Newness, Uncertainty – represent the basis for the definition of what is and what is not a start-up. It appears clear, however, that these sole attributes would not be exhaustive enough to actually make a clear cut from one company to another; moreover, it would be academically unorthodox and quite imprecise to consider just one author's opinion.

Therefore, in the next paragraphs, the major definitions about "what is a start-up" which deviate partially – or totally – from what defined until now, will be collected and analyzed in order to build a set of *attributes* which will then be used to create a wider and more objective definition. This was done with the primary objective of making sure that the work that will be carried on for the remaining of

this project would have solid foundations and would be as objective as possible.

3.1.2 STATE OF MIND, GEOGRAPHY, GROWTH RATE

As previously discussed, a univocally-accepted definition about what is a start-up seems to be still missing within academic literature; there are dozens of interpretations, and almost each one of them makes a point which is difficult to ignore.

In the following lines, hence, we tried to make a starting point by linking a set of definitions about start-ups which present meaningful characteristics differentiating them. Interestingly enough, a topic which received such attention in the last years presented a greater deal of disagreement than one would expect.

“What is a startup?”

If we stick to the Oxford Dictionary, starting-up means: "the action or process of setting something in motion."; which happens to be pretty far from an encyclopedic definition. The real point is that there is no definition whatsoever any two academics, investors or founders would agree on.

Alex Wilhelm (Wilhelm A. (2014)) – TechCrunch writer – developed a concept, which he called “50-100-500 rule”, to solve this issue: “If your company has, or is, any of the following, you have to hang up your Startup Uniform, and realize that you are just another technology company either hunting for or actively avoiding an IPO,” Wilhelm writes. “\$50 million revenue run rate; 100 or more employees; Worth more than \$500 million, on paper or otherwise.”

The problem with such a “formula” is that every corner store which has been there for a couple of decades could be considered a start-up.

Steve Blank – Stanford Professor – describes it as “an organization formed to search for a repeatable and scalable business model.”

This definition appears particularly interesting as it focuses on an aspect which the most neglect when it comes to defining a startup: a *repeatable* and *scalable* business model.

Neil Blumenthal (Blumenthal N. (2013)) – co-CEO Warby Parker – gives a definition which is very close to Steve Blank’s: “A startup is

a company working to solve a problem where the solution is not obvious and success is not guaranteed”.

Perhaps the definition with the highest chance of acceptability about start-ups is that there is not one. Nevertheless, following a lot of founder’s beliefs, being a startup is more a state of mind than a matter of numbers.

As reported by Uden L., Fuenzaliza D. et. Al. (2014), Adora Cheung – Homejoy CEO – says “[A] startup is a state of mind. It’s when people join your company and are still making the explicit decision to forego stability in exchange for the promise of tremendous growth and the excitement of making immediate impact.”

The co-founder of – \$19 Bn. – WhatsApp, Jan Koum also says a startup is somehow a feeling, as Shontell A. (2014) points out: “I think [a startup is] not connected with time. They say what is important about age it's not the number, but how it feels. For example, I do not feel like I'm 38. [Our] company is five years old but we are moving quickly and we make decisions quickly, we build products, so we are still a startup. We do not have meetings, conferences etc.”

What shines through these definitions – and what bonds them together – is that a start-up is a sort of mix of both mathematical indicators (such as the “50-100-500” rule) and personal feelings and emotions.

Developing a complete and objective definition about startups will, thus, entail linking quantitative as well as qualitative attributes together in a way which grants meaningfulness to both of them. Despite the differences, there are some point to which it's easy enough to agree about the answer to the starting question. First of all: crucial attribute for a startup is its ability to grow. As Graham P. (2012) frames it, "a startup is a company designed to scale very quickly". This constant focus on growth, with no geographic constrains marks the difference between startups and small businesses.

- STATE OF MIND & GEOGRAPHY:

As mentioned, and underlined by Venuvinod P. K. (2011), a startup is more a matter of "feeling startupper" than a matter of numbers; the fact that we are used to think about founders as of very brilliant, eccentric and chaotic people is not entirely a stereotype. Start-up is how employees feel when they work, or even when they think about their working environment; the "pin-pong" table idea seems to be more powerful than it may seem. Calling yourself a "startup" may be beneficial for the attraction of start-up-minded talents; it may help to attract the same employees but with lower salaries, just because they emphasize with the difficulties of the company. Hence, from here on, we will refer to the "start-up state of mind" referring

to the typical feeling of community and empathy which is quite common among startups. Just to make a clarifying example, a company – like Activision Blizzard, Inc. – where co-working is set in place would be a lot more “start-up-minded” than a company with classical office space – like Rockstar North – despite working in the same industry.

The other crucial difference between startups and SMBs is their global attitude, or better – as Graham P. (2012) frames it – “the fact that they don’t have high geographic constraints”.

A particular mention should also be given to the geographic location of startups. Mainstream thinking on this topic usually relates to startups referring to hi-tech companies in the Silicon Valley district; it should, instead, be noted the geographic distribution of start-ups is rapidly changing and that a more than negligible number of them – actually, the majority of them – is located outside not only the Silicon

Valley, but also outside the US (for further details on *Figure 28, See Section 2.3*).

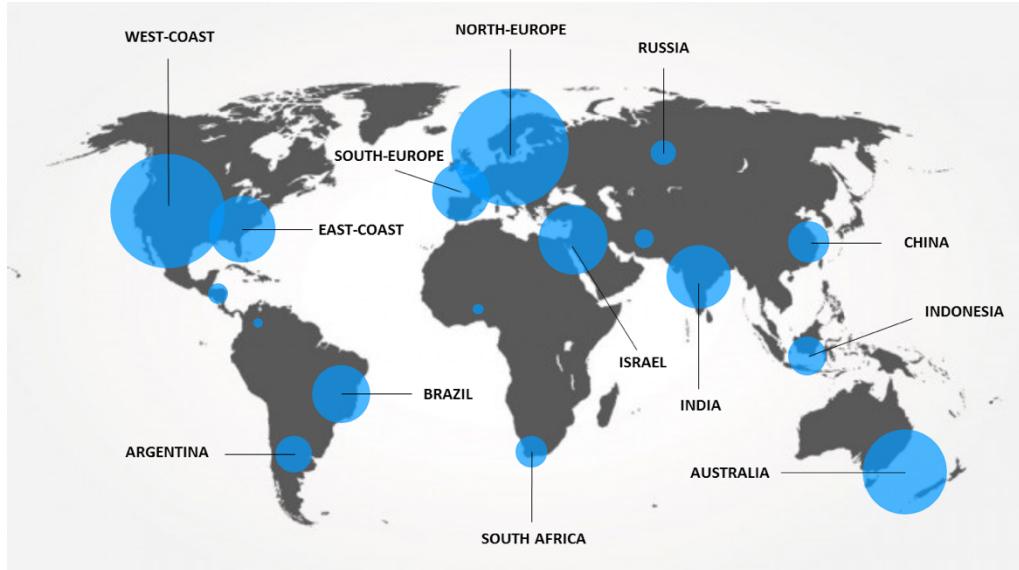


Figure 28 – Startup Distribution Worldwide; EUROSTAT; 2015; Personal Processing

- GROWTH RATE:

For the majority of Start-up investors and funders, the growth rate is the most important metric to keep track of. Although there's no evidence demonstrating that it shouldn't be strictly monitored, a crucial interrogative often arises: What is a good growth rate?

Venture capital-backed startups usually aim for 5% or higher growth per week, that is the threshold level of optimal growth, the golden number; Y-Combinator sees 5-7% as a "good growth rate" and 10% as an "exceptional" one. Even if this might work for some companies, numerical evidence

shows that it doesn't work for all or even most of them. Rapid growth is not a guarantee that a sudden collapse won't happen, in particular if that growth comes from scaling too quickly. Clarified the fact that too often, as underlined by McKelvie A., Wiklund J. (2010), the focus of research is rather on "how much" than on "how" a company should grow, we could define what's an efficient – more than an optimal – growth rate.

It is true, almost every investor has its "magic number" – which, quite often, is pretty far from objective. Since "gut instinct" and magic too often proved to be related more to luck than to measurable and rational processes, our objective was to define a threshold number – which will represent the "magic number" for this analysis – in a more mathematical and objective way. In brief, we wanted to identify an "*optimal-growth-value*" which results the best indicator – for what concerns growth rate – referring to startups; this value will then be used as one of the Macro-economical variables in the final model.

The characteristics this number should have are mainly three. First of all, it has to be *verifiable*, meaning that there has to be some sort of "proof" that when this number has been achieved, important and tangible results came along. This is the main reason why the 5-7-10% values cannot be considered

good enough for this analysis; they are arbitrary and subjective numbers, with all ambiguity which derives from it.

The second, crucial, trait of this parameter, is that it has to be mathematically *meaningful*. We won't take into consideration merely qualitative measures; and if for some reasons they are needed, we are going to convert them into quantitative ones, in order to be able to compute them and work more objectively with them.

Last, but not less importantly, the parameter should be *repeatable*. This means that once this number will be set, companies which will be analyzed further in this project should prove the correctness of the measurement. Basically, this is to be seen as a sort of “testing” of the parameter; if companies do act consistently with this parameter and have specific results – coherent with what the parameter predicts – it would mean that the parameter chosen has a proven validity. Needless to say, if this will – indeed – happen, that number would have a very important meaning (Zhao J-M. et. Al. (2014)).

According to Paul Graham (Graham P. (2012)), a startup is a “company designed to grow fast”. He also underlined how, for companies supported by Y-Combinator, a good growth rate is set around 5 to 7 percent per-week; while a 10 percent weekly growth is an exceptional growth rate. However, a 10

percent growth can't last forever, if it did, the results would be amazing.

Institutional Venture Partners (IVP), conducted a 5-years-long research aimed at studying startups growth rates. In the following paragraphs, the results from this research will be presented, followed by a brief analysis conducted on such data.

For the analysis itself, data were pulled both from the Internet as well as from IPOs software since 2010; historical growth rates were then tracked for each company in analysis for the four years before they went public and for the year of the IPO.

Out of these 70 companies, some of them (like Groupon) grew extremely quickly initially, but, as they scaled-up, they experienced steep slow-downs. Other companies (like HomeAway) kept a lower but steadier growth which was maintained over their IPOs and beyond. While it's clear that every company and market is extremely different, data were aggregated to obtain median growth rates for five different revenue ranges (as shown in *Figure 29*):

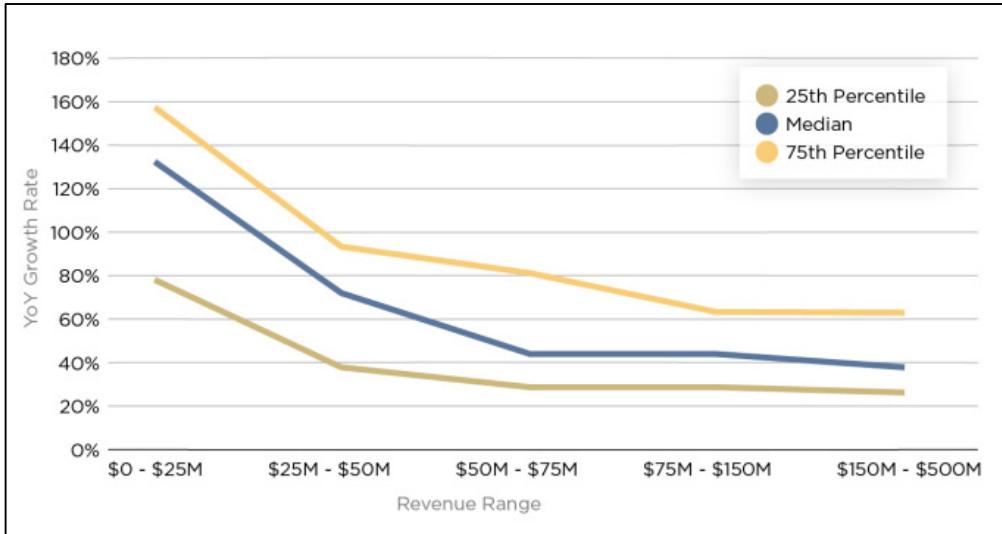


Figure 29 – YoY Growth Rate per Revenue Range; Institutional Venture Partners; 2010-2014

As the chart above clearly shows, company whose aim is to become public should be growing decisively faster (in percentage) the smaller they are. The “median company”, with revenues between \$0 and \$25 million, grew at a surprising 133%. As these companies climbed towards the \$150 million to \$500 million revenue-range, they grew at a more contained yearly rate of 38%.

Furthermore, those companies with the most successful IPOs (Tableau, Workday, Splunk, ServiceNow, Marketo, LinkedIn) achieved growth rates equal or above the median benchmarks for each of the years observed before the actual IPO. As expected, the median revenue multiple at IPO for these companies was significantly higher at 7.3x yearly. Conversely, the median revenue multiple for companies with

growth rates below the median benchmarks for each of the years observed was only 3.8x.

At this point, a few considerations can be made.

The lowest growth-rate threshold is 20%. Companies are only able to become public if they are growing quickly. Of the 70 IPOs tracked in this analysis, 69 of them were growing more than 20% in the year of their IPO, and 54 of them – which is a 77,14% – were growing faster than 30%.

Revenue is relative. Meaning that the quality of the revenue matters just as much as its quantity and the growth rate itself.

Those companies that were valued most auspiciously at IPO presented predictable revenue streams, high gross-margins and high customer satisfaction.

Growth matters post-IPO just as much as before it. While the previous analysis focused almost entirely on pre-IPO data, these benchmarks remain valid for public companies as well. For example, at its IPO in 2011, LinkedIn was valued just over 4 Bn. US\$. In the last 6 years, its revenues have grown above 1 Bn. US\$ with an annual CAGR of 86%, which greatly exceeds this study's benchmarks. As a matter of fact, the company is now valued at over 26 Bn. US\$.

To conclude, the "*optimal growth-rate value*" which we'll be referring through-out this study will have the following characteristics: be higher than 20% (YoY); the growth rate

should be higher the lower the revenue of the company; ideally, the 20% – or higher – growth rate should be maintained even after the IPO.

3.1.3 NEW KAUFFMAN INDEX

What follows is a brief analysis of the “New Kauffman Index” which proved to be very useful and inspiring for the definition of the basis of this work. This index, basically, formulates a set of indicators which are used to define the entrepreneurial activity in a specific region.

The starting theoretical literature from which the index was developed is represented by “*The Leading Indicators*”, by Zachary Karabell (Karabell Z. (2014)). In his paper, he explains how “[...] there are serious limitations to the current set of economic statistics on which we all rely to track the economy”. Despite not being the first writer on this topic, Karabell’s work is quite exhaustive on the subject and takes an approach which is more of “construction” than of “mere confuting”.

The point – which I totally endorse – is that using “classic” numbers can become quite imprecise, according also to Merchant K. & Van der Stede A.W., (2007), when analyzing realities which are brand-

new; this causes the need to constantly change – and possibly improve – the indicators we use in economics.

Since entrepreneurship will grow in importance following technological progress, changes in different economic structures will be more and more necessary: new, young, and growing companies – most of which born as startups – will be at the cornerstone of the economic system of the next years. Albeit not everybody agrees with Drucker P. F. (1992) on “you can’t manage what you don’t measure”, data are, indeed, useful.

Managing a determined activity, process or function becomes quite easier – meaning results can be predicted more precisely – if you have some data at your disposal; even though they are not always necessary. Entrepreneurial activity is something that cannot be strictly “managed”, although improvements in data on entrepreneurship make it possible to improve public and private decision-making. New data analysis from the Census Bureau and others (McKinsey&Company (2011)) in the last years allowed economists to reveal that new and young firms are the principal sources of net job creation – in the United States.

Measurement does matter, and improvements in entrepreneurship data will continue to be crucial in public policy, private decision-making, and other areas.

According to Morelix A. et. Al. (2016), the algorithm of the “Kauffman Index: Startup Activity” reported here (*See Figure 30*), takes

into account three variables and focuses on the US environment: Rate of New Entrepreneurs, Opportunity Share of New Entrepreneurs and Startup Density.

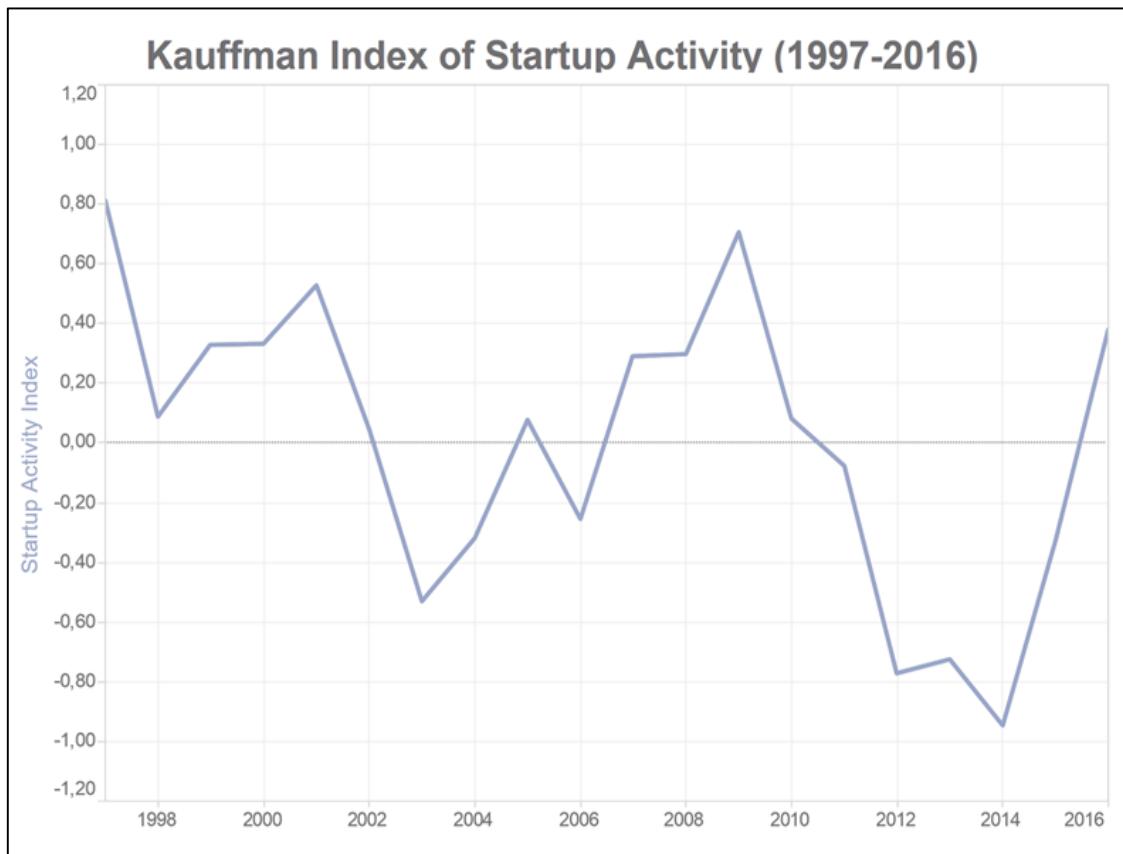


Figure 30 – Kauffman Index of Startup Activity; 1997-2016; Personal Processing

- RATE OF NEW ENTREPRENEURS:

The Rate of New Entrepreneurs is calculated as the percentage of adults becoming entrepreneurs in a given month. It presents a high variation across states, going from

170 (new entrepreneurs for every 100,000 adults in a given month) to 540.

- *OPPORTUNITY SHARE OF NEW ENTREPRENEURS:*

The Opportunity Share of New Entrepreneurs is calculated as the percentage of new entrepreneurs driven primarily by “opportunity” vs. “necessity”; thus, it measures the percentage of new entrepreneurs who were not unemployed before starting their new businesses.

It varies across states, from 69.0 percent – in Alabama – to 90.3 percent – in Idaho. This means that, in Alabama, approximately three out of every ten new entrepreneurs were previously unemployed, while in Idaho less than one out of every ten new entrepreneurs was previously unemployed.

- *STARTUP DENSITY:*

The Startup Density component of the Index measures the number of startups per 100,000 people—varies immensely across states, going from 81.4 startups per 100,000 people in West Virginia to 177.7 startups per 100,000 in the state of New York to 244.7 startups per 100,000 in North Dakota. As

companies captured by this indicator have employees, they tend to be at a more advanced stage than are the companies in the Rate of New Entrepreneurs measure.

The main reason why a brief description of the Kauffman Index was introduced at this point is related to the fact that analysis of the index proved to be fundamental for the definition of the parameters which will be used further in this work. The detailed description about how the authors correlated the Startup Density with the Rate Of New Entrepreneurs, in particular, resulted quite critical.

3.1.4 PARAMETERS GENERALIZATION

In this paragraph, starting from the definitions now analyzed, we will introduce the core attributes which will define what is a startup. Nevertheless, such classification has been crafted by merging the core attributes of the mainstream definitions about startups, together with other traits which, to us, appeared particularly meaningful.

The previous analysis of *New Kauffman Index* (See Section 3.1.3) resulted extremely meaningful for the creation of the definition of startup; in particular, it helped understanding how, when defining a

phenomenon, it is crucial to study it with an *outside-in* approach. Meaning that, without a good understanding about the environment in which an actor operates, it may result extremely complex to properly analyze its peculiarities.

With this in mind, we adopted the same approach by defining a startup starting from its environment and “Macro-characteristics”.

The first attribute, which characterizes startups, is what was previously described as high *Uncertainty* (*See Section 3.1.1*). This relates to the fact that startups operate in extremely peculiar and risky market conditions, which clearly differentiates them from “traditional” businesses.

Above all, uncertainty refers to three main aspects.

- i. Startups operate in a typically uncertain market, meaning that they often do not have a precise niche of customers nor a clear idea about the level of competition.
- ii. Uncertainty also refers to their business model. On one hand, startups are typically designed to have unique BM, meaning that they are specifically tailored either to “do things differently” or to “do things better than competition”. On the other hand, more often than not, startups drastically tweak their BMs during their path.

- iii. This peculiar flexibility – despite being a great advantage – is seen by traditional businesses as favoring an extremely uncertain environment.
- iv. Startups face huge uncertainty when it comes to the product/service they're offering. In particular, they constantly track feedback from the market and their product or service may change several times each month.

The second aspect defining startups is what we called *Vision* (*See Section 3.1.1*).

Startups have, typically, strong values commonly shared by both the founders and the employees. This vision is composed by three main attributes:

- i. There's hardly-ever a complex and vertical structure. Startups are basically composed of two – or even one – hierarchical levels.
 - a. CEO and employees share the same space, the same facilities and – often – the same table. It's a sort of free-flow environment where the only thing that matters, at least at early stages, is the feeling of community.
- ii. CEOs are entrepreneurs. Startups are never spin-offs of bigger firms nor side-projects, they born from entrepreneurs which have a business idea and decide to pursue that project.

iii. Startups is a *State of Mind*. People working in these organizations are typically friends or former colleagues, they share the same values and their prime aim is to solve a shared problem. To put it simply, becoming billionaires will almost never be a startup CEO primary objective.

Coming down to the core, startups always bring some kind of *Newness*. Analyzing this aspect to the root, it comes down to their business model.

In order to be a startup, there's key attribute to be met: either doing something completely new, or completely changing the way something has been done until now.

Adopting a unique BM, for as easy as it may seem, represents one of the biggest challenges for startups. It means thinking out of the box, making risky choices, venturing on unexplored paths and looking for underexploited opportunities.

In a nutshell, if a company is doing exactly what other companies are – or have been – doing, that is not a startup by any means.

Moreover, startups do not know *Geographical Boundaries*. They typically born with a “global” spirit, designed to scale quickly and be adaptable in almost all markets. This doesn't mean that their products/services will equally serve the global market, nor that they will all become global. It simply entails that their aims are never

restricted to a single city, region or country's market; they focus on features, not on the scale of their business.

In addition, startups are more prone to expansion than traditional businesses of similar magnitude; they have BMs which can easily be exported and adapted to foreign markets.

The last characteristic which defines startups refers to their unique *Growth Rates*. By adopting particular ways of financing – being VCs, Angel investing, Crowdfunding, Accelerators, etc. – and often leveraging on technology, they have the ability to grow at amazing speeds.

In the previous sections (*See Section 3.1.2*) it has been analyzed what is considered a “good growth rate” for startups; when comparing such data with those of analogue businesses we can clearly understand how: (i) startups do not have linear growth patterns and (ii) overall, a growing startup will grow at almost 4x the pace of a “traditional” business.

3.1.5 OUR STARTUP, A DEFINITION

To conclude the theoretical section of this thesis, a fundamental interrogative still needs answering: what is a startup?

According to the attributes analyzed in the previous sections (*See Sections 3.1.1, 3.1.2 and 3.1.3*), a startup is:

a flexible and evolving business entity,

with a strong vision, a commonly-shared objective

and a non-hierarchical structure

which operates with a unique,

scalable and repeatable business model,

develops at remarkably high growth-rates

and is designed with a global perspective.

This definition, although complex to some extent, presents all the characteristics which have resulted essential to include.

A theoretical and exhaustive definition as the one provided has also been necessary to build the final model on a basis resulting as objective as possible. In particular, such definition does not contradict any of the definitions analyzed until now (*See Section 3.1*) while

bounding them in a wider dimension and recognizing the added-value of all of them.

To conclude, a final important point still needs to be addressed. All those companies that will be analyzed in this thesis will be, at first, screened through the previous definition. Those resulting startups – according to the definition – will be taken into consideration for further analysis while the others will be simply discarded.

Following this methodology, we will be able to give to the whole project a strong internal consistency while also setting the basis for the construction of the final model.

3.2 STARTUP: SHAPING THE BUSINESS AND GETTING FUNDS

In this section will be enucleated the core attributes concerning startup business models, with particular attention to those which have been considered “best practices” and “worst practices” in the debate arena.

More than that, a paragraph has been dedicated to analyzing and discussing the financing phase within startups’ lifecycle along with a

summary of the most common financing practices compared with more recent and creative ways of generating cash-flows for newborn startups.

3.2.1 BUSINESS MODEL

A well-developed and properly designed business model (BM) is the core value of any successful startup.

As George, G & Bock, AJ. (2012) frames it, a business model “it’s the mechanism by which entrepreneurs create the possibility to grow and exploit.”; Osterwalder, A. & Pigneur, Y. (2010), instead, formalize it by saying that “a business model, describes the basis by which an organization can create and capture value”. Despite this being still a discussed topic, it has been widely demonstrated that a mere product – despite its usability, uniqueness or features – will hardly make a company successful unless it is surrounded by a viable way of cashing-in which is attractive enough for future investments; in other terms, a strong and well-rounded business model.

Indeed, while most founders focus on product features and users’ feedbacks – which are also crucial for a successful launch of a business – they often seem to partially neglect crucial questions such as “Which

business model works best with my idea?" or "How do I know if my startup is using the right model?".

Clarified its importance, the business model a company chooses needs to focus on two main aspects: it has to perfectly fit the role of "solving a costumer's need in a profitable way" and it has to do it better than competitors. Obviously, there are a great number of different business models adopted by companies, and it's particularly crucial to match a company with its best-fitting BM.

About this, one of the most common mistakes founders make is trying to reinvent a business model, or create a new way of generating cash-flows that "has never been done before".

To investors, this often sounds like "I am going to use an unproven way of making money for my venture, and most likely not give you a return on your investment" more than "I'm a creative and brilliant person and I will make you money".

There are dozens of options to generate revenue that have already been proven to work, and it is founder's job to figure out which one works at best with their business.

Therefore, in order to achieve a consistent growth, it appears crucial to create a *repeatable* and *scalable* BM. Without these two necessary conditions, it would be extremely hard to successfully foster the development and manage a startup.

In particular, adopting a “repeatable” BM means conducting the business in a way which makes it easy to successfully reiterate it in the future in order to generate meaningful returns.

Furthermore, building a “scalable” BM means creating an environment where it’s relatively easy to increase returns faster than costs.

However, there’s also a third aspect which is considered crucial by a number of studies: a BM should be “innovative”.

The concept that a start-up needs to validate a BM – which requires the non-pre-existence of a similar business – has not been proven though. As a matter of fact, there’s indeed a plethora of examples of successful startups which adopted very linear and commonly-used business models.

To conclude, a startup should adopt a *repeatable* and *scalable* business model; on top of that, it should try to tailor it in a way which results as fitting as possible for the needs of its customer group. This means that using a “new” or “innovative” business model is not completely right or wrong, it simply means that it should not be the primary focus upon constructing it, but it could be a happy side-effect if the other two prerequisites are met.

3.2.2 THE INVESTMENT CHALLANGE

It is undisputable that any startup, in order to properly reach its business objective, needs external funding of some form.

In particular, fundraising and the proper funding procedure are absolutely crucial steps for building and sustaining a successful business.

As a matter of fact, there are a number of financial tasks for an organization which need to be properly planned and managed; however, this arrangement and management can only be attained when funds have been properly allocated.

On top of that, funds need to be raised in order to achieve the predefined financial agenda of a firm; failing to do so could drastically cripple the company, ultimately leading to unwanted delays and even to failure.

It's worth underlining how this step has a particularly crucial impact on startups. As have been widely demonstrated by Van Osnabrugge M. & J. Robinson R. (2000), the major factor of failure for startups in their early stages is linked to funding; whether it means inability to attract the needed investment or to properly allocate the raised capital, funding plays a crucial role and should be analyzed with the maximum consideration.

Hence, there are several reasons why obtaining external funding is so important for startups, in particular in their initial phases.

Meeting the financial objective is definitely one of these reasons.

Every startup – or, better, every company – has financial business goals to be reached which, ultimately, need to be achievable.

This funding process has to take place in a timely manner so that it becomes easier to plan financial tasks in a simple way.

All startups which establish their business need to ensure that their path of growth is as free of obstacles as possible.

Fundraising and funding activities in general should, thus, aim at removing all the possible financial bottlenecks which may arise on their path toward success.

Another important reason relates to business standards. As the level of competition in market has clearly been increasing, it appears essential for companies to try and match the highest standards of business world. Therefore, funding activities should be also aimed at improving these standards within companies in order to foster their growth patterns.

In particular companies – despite being startups or well-established ones – should either focus on meeting a customer's need which is unsatisfied or on providing a better solution for a specific problem than what already exists on the marketplace (R. Hiebeler, et. Al. (2012).

Despite fundraising has traditionally been one of the most problematic parts of getting a startup going, the birth of new technologies and platforms has given entrepreneurs a plethora of new ways for connecting with investors.

These days, there are more opportunities than ever to get a new company funded.

As Aaron Harris, partner at Y Combinator, puts it: "One of the really cool things that's happening right now is this massive proliferation of ways to start a company and ways to get your company funded.". (*See Figure 31*)

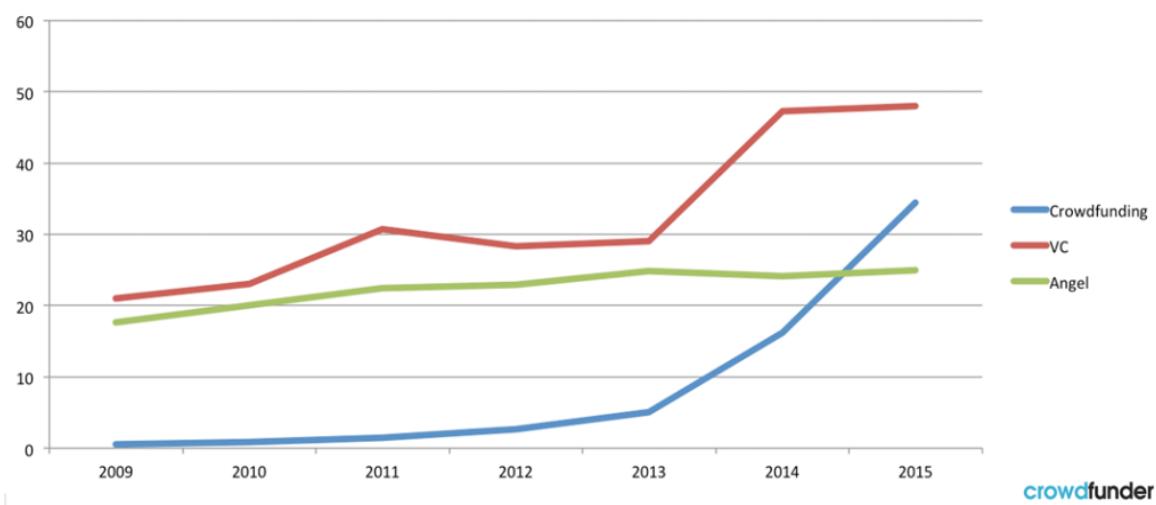


Figure 31 – Annual (Billion) Funding, VC VS Crowdfunding VS Angel Investing, 2009-2015; Crowdfunding.com

Just a few years ago, new businesses were only started by wealthy proprietors as well as by business-leaders who could bring capital from another successful project. Thus, as venture capitalism grew, more capital became available to entrepreneurs who wouldn't have had access to it before. Then, as angel investors became more and

more popular, founders had a brand-new way to get capital at an early-seeding stage when most VCs wouldn't dare. Now, crowdfunding has added another layer to the investment equation for entrepreneurs (See Figure 32).

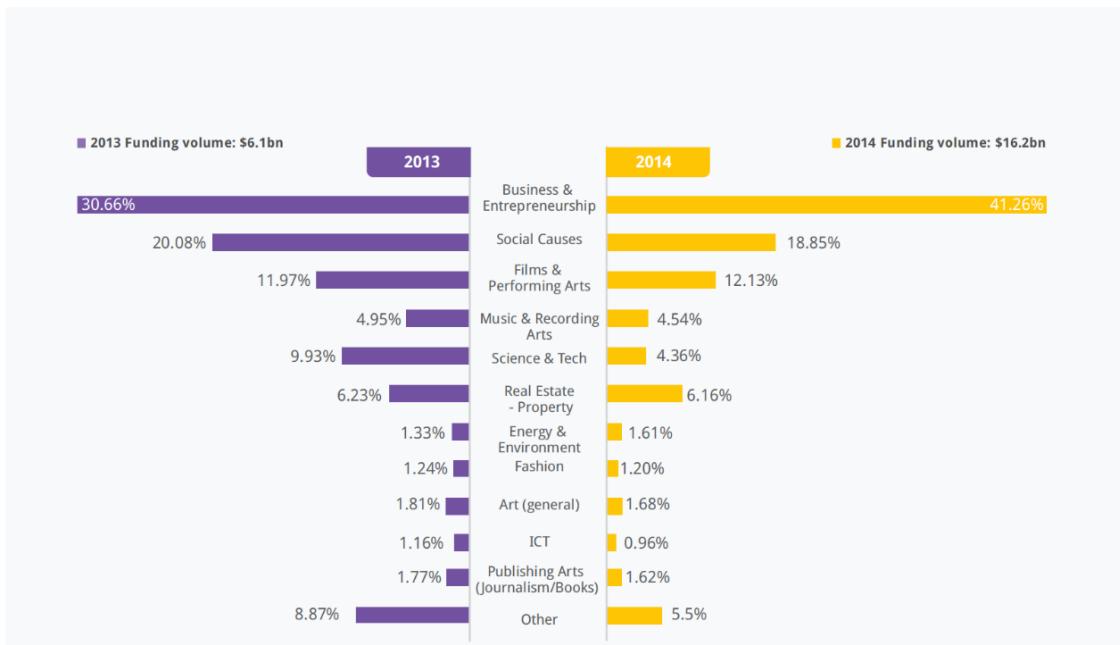


Figure 32 – Percentage of funding volume across the eleven most active categories (2013, 2014) in US\$; Y-Combinator

At this stage, where funding becomes available from multiple sources, we are experiencing what Harris named "the progressive elimination of gatekeepers." Nevertheless, such a process can still be pretty tricky to go through, especially for first-time founders.

NVCA President and CEO Bobby Franklin, underlined how certain funding options will undoubtedly work better for specific companies than for others. In the following paragraphs, hence, the most popular forms of funding will be briefly examined along with their main strengths and weaknesses.

a) CROWDFOUNDING:

The recent growth of crowdfunding platforms such as Kickstarter and Indiegogo have proven to foster a great improvement for nonprofits and other organizations; but they also give startup founders an exceptional opportunity to sell their idea – and get crucial feedbacks – direct to their consumer target. The following graph gives an insight on the recent volumes reached by crowdfunding (See Figure 33).

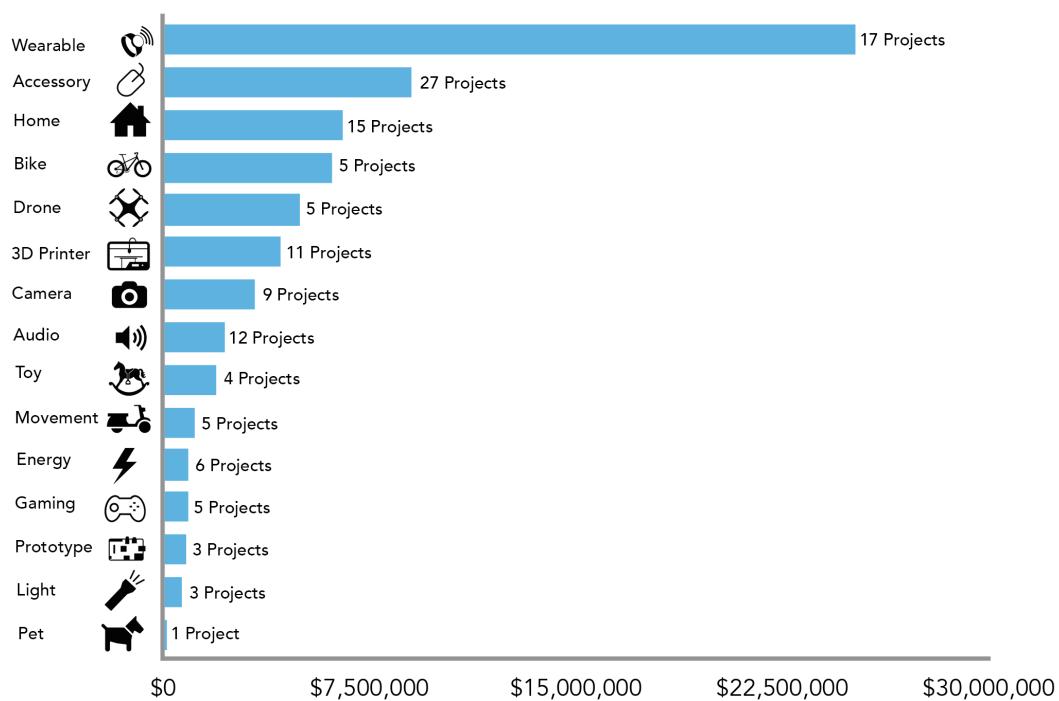


Figure 33 – Crowdfunding Dollars Raised, 1st Quarter 2016, US Bureau of Economic Activities

Co-founder of Indiegogo Danae Ringelmann sais: "We don't see crowdfunding and venture capital as mutually exclusive. We're seeing Indiegogo become an incubation platform for traditional financiers to come in and discover new ideas,". "A successful crowdfunding campaign helps prove to VCs, angel investors and banks that there is a demand for a product in a marketplace, removing some of the risk from the equation." (Forrest C. (2014)).

For startup founders, crowdfunding represents a way of pre-selling their product – or service – to basically test the market. Crowdfunding becomes particularly useful for those entrepreneurs who adopt the "hardware or creative line of thought." A clear example of this can be found about the Kickstarter campaign for the Pebble smartwatch, which broke the Kickstarter funding record back in 2012.

One of the great benefits of crowdfunding is that none of the "investors" become shareholders in the company they are funding; this, breaks one of the toughest barriers about traditional funding practices: companies get to preserve equity while raising capital. The basic difference is that, with crowdfunding, companies have to actually deliver the product to get that money; where angel investing and VC provide investments up-front to build a company and get to the market down the road.

Crowdfunding works mostly as great a feedback option. It also becomes pretty powerful for companies who are trying to check their idea, and it can certainly help to improve the pitch if they are aiming at getting further investments from an angel or a VC. However, the audience on crowdfunding platforms may not represent how a product will do in the real market.

As the angel investor Tony Schy, puts it: "Just because your Kickstarter campaign gets funded, it doesn't mean that you are going to have wide-scale market adoption," he continues "Kickstarter by definition, the people who pre-order things on Kickstarter, myself as an example, we're early adopters of things because we like that type of thing, and not a mainstream buyer by any means." (Forrest C. (2014)).

So, while crowdfunding represents a great opportunity to get through the first run of a product, or prove to VCs that people are actually interested in what you are doing, it's definitely not the best option in terms of long-term funding. Moreover, crowdfunding itself, is still in its early stages, so it's hard to tell how its impact will be in the long run.

b) BUSINESS ANGELS:

The term *Angel investors* identifies a well-off individual who finances a business in exchange for equity with his personal capital. Normally, angels are credited stakeholders in other companies, meaning that they either have a net worth of 1 Million US\$, or they had an individual income of 200.000 US\$ for the last two years and an equal expectation for this year, or, again, they and their spouse had a combined income of \$300,000.

They typically fund startups at its seed stage. This means that there is a higher risk associated with angel investments as they are dealing with unproven business models. There's also a consistent probability that the company doesn't have a product yet and, if they have customers, they might not have significant revenue at that early stage. Still, they typically use less strict metrics than VCs to measure a potential investment.

Angels can invest in two ways: autonomously or within a group. In the second case, they can do it as associates of an *angel fund* or of an *angel syndicate*. Angels back syndicates led by a noteworthy angel investor, and they pay a *carry* back to the lead as a fixed percentage of the profit they make on the deal.

Despite these groups investments are often referred to as “crowdfunding”, we will not refer to them as such in this thesis.

As T. Schy said, reported by (Forrest C. (2014)), “When you bring an angel on board, you want to make sure you have the right one, because it's like getting married, except you can't get divorced easily. They become your business partner whether you like it or not. You would hope that the angel, in addition to capital, brings a rolodex that they can tap into and/or relevant business experience that they advise you in.”

The obvious opportunity which angel investing brings to the table, is that new-born companies which haven't been able to plan all of the aspects of building a business yet have a chance to get the funding and the expertise they need.

On top of that, as Harris said, “Usually the time needed to take an investment from an angel is significantly shorter than the time needed to raise a similar investment from a traditional VC firm,” (Forrest C. (2014)).

Nevertheless, despite these advantages which may be crucial for a startup, there are some considerations to be made about Angel Investing. While there are some individual angels that have incredible insight into building-up a business, there are also early-founders, fresh from an IPO or acquisition, who

might not have the necessary knowledge to support your company.

On this line, angel syndicates provide access to even larger capital, but they might result problematic to get non-financial help from as well. Indeed, individual subscribers to a syndicate do not have any connection to founders at all, and the leader, who may have the experience a startup needs may become extremely difficult to get in touch with.

c) *VENTURE CAPITAL:*

VC investing is the most famous way of raising capital for a startup. Alex Oppenheimer, partner at New Enterprise Associates, said that it all begins with setting your expectations.

"I think you first have to assume that you'll be getting what you expect out of venture capital. That being: value added investors, productive board members, portfolio benefits, follow on capital, guidance, access to experts, and media exposure," he continues "I think these are the key value adds of traditional VC. That being said, not all VCs are created equal and not all are willing or able to provide this upside to companies for a variety of reasons."

Most of the businesses undoubtedly prefer VC investing over other options. The reason being that VCs, and the firms which they represent, are specifically set up to help other firms grow and succeed. Their prime task is to make sure a company is profitable, because that means that their firm will also make money.

Basically, with VCs, startups are connecting with a huge pool of capital. If a business is working with a great VC firm that believes in it, it will be particularly easy to raise funds.

Also, Venture Capitalists typically save surplus capital for follow-on investment rounds. This results extremely helpful for those companies that need additional time to build their businesses. Another huge value provided by VCs, is the access to their networks for both employees and clients.

Franklin goes on by saying that "These days, capital might be the least important item that they bring, they bring a wealth of experience. Many of them bring a particular expertise. Many of them were serial entrepreneurs themselves. They've been there, they've done that. They know the pitfalls that folks trying to start companies and be successful face."

Undeniably, there are a number of hazards in venture capital. One of the worst being taking VC early; there is the potential to overvalue the company, which will affect it later down the road. On top of that, rules surrounding a VC

investment are typically quite stringent, and there are rigorous timeframes for the return on the investment.

To conclude, as Franklin says, "The venture capitalists bring a lot of things to the table besides a check, the crowdfunding and the other means and platforms by which startups are getting funded today is something that we as a country ought to celebrate, and recognize that every startup is not created the same. Every startup is going to have its own unique needs, and some of those will be better suited for crowdfunding, and some of those will be better suited for venture capital, and some of those may be better suited for angels."

d) FAMILY OFFICE:

Investopedia defines *Family offices* as "private wealth management advisory firms that serve ultra-high-net-worth investors"¹⁷.

Certainly, they are quite different from "traditional" wealth management firms as they provide a completely outsourced solution for managing the economical aspects of an affluent individual, or family, life. In particular, most

¹⁷ <http://www.investopedia.com/terms/f/family-offices.asp>

family offices propose budgeting, insurance, charitable giving, family-owned businesses, wealth transfer and tax-related services.

Nevertheless, family offices can be broken down into two main subcategories: single family offices and multi-family offices, often referred to as SFOs and MFOs.

SFOs assist a sole ultra-wealthy family, while MFOs are more strictly related to traditional private-wealth management activities, building their business upon serving different clients. In addition to that, family offices can also handle nonfinancial issues such as private schooling, travel arrangements and miscellaneous other household arrangements.

Providing the assistance and services for such families under a wide-ranging wealth-management plan requires more than the ability of any single professional advisor. It requires a well-coordinated, collective effort by a team of diverse professionals from the legal, insurance, investment, estate, business and tax disciplines to provide the gauge of planning, guidance and resources needed.

The majority of family offices combine asset management, cash management, risk management, financial planning, lifestyle management and other services to provide each

family with the crucial tools for addressing the key issues it faces as it goes through the complex world of wealth management.

After a lifetime of wealth accumulation, high-net-worth families are often challenged with several difficulties when trying to maximize their legacy. A complete wealth-transfer plan must, thus, take into account all sides of the family's wealth, including the transfer or management of business interests, the disposition of the estate, management of family trusts, philanthropic desires and continuity of family governance. Family education is an extremely important aspect of a family office; this includes training family members on financial matters and teaching the family values to minimize conflicts among its members. Family offices collaborate with a team of advisors from each of the necessary disciplines to ensure the family's wealth-transfer plan is well-coordinated and optimized for its legacy desires.

Lately, both SFOs and MFOs, have been focusing wealthy families' investments towards the world of startups. This has opened a wholly new channel for businesses to reach possible investors which has a peculiar distinction from more traditional funding practices.

Businesses in which family offices decide to invest in are much more likely to get further funds from the same family

(or group of families) in the future. This is mainly due to the fact that the interests of a whole family and its legacy tie-up with that particular company and, if the first investment proves worthy enough, family offices are likely to consider further investments in an “already known” company rather than in a brand-new reality.

e) INCUBATORS & ACCELERATORS:

One of the best ways to help newborn businesses get off the ground, is to leverage on the mentorship assistance of an incubator or an accelerator program.

An *incubator* is, basically, a physical space acting as a Central Hub where it is possible to locate a business together with many other startup companies. In most cases, startups working in these incubators can all be VC funded by the investor group which is running that particular incubator. Companies can stay in these spaces as long as they need to, or until the business has grown to a point where, to the scale, it needs to relocate to its own vital space. The mentorship in such programs is typically provided by established entrepreneurial investors.

On the other hand, a startup *accelerator*, despite being similar, has some peculiar differences. First of all, the time which a company can spend in these spaces is typically restricted to 4 months. Thus, accelerators are basically designed to jump-start businesses and push them to the market. The actual cash investment which these programs put into startups is quite minimal, but the time spent in the accelerator should greatly improve the odds of raising VC investments from a third party on the back end, provided that the business graduates from the program. Mentorship could be coming from dozens of entrepreneurs affiliated with the accelerator (many of whom are proven CEOs, or investors looking for their next opportunity or simply helping the local startup community).

Deciding on whether or not a startup should kickstart via an incubator or accelerator largely comes down to its personal confidence in the defensibility of the business model as well as its execution and fund-raising skills. In particular, businesses which have a trustworthy record and are growing on their own, possibly don't need to be part of one of these programs.

The advantages of programs like these are mainly three: (i) shared-learning and mentorship; (ii) access to capital, either

within an incubator or post an accelerator; and (iii) the PR value and exposure you get from these programs.

The disadvantages, on the other side, are: (i) they can be distracting, with lots of related meetings and events with mentors and investor; (ii) they can be confusing at times, so a good "filter" on any advice is very much needed; and (iii) sometimes, sharing space with other companies is not always a plus, especially in long term incubators that may be carrying dead weight of under-performing companies.

Overall, these programs represent huge opportunities for first time CEOs, that can quickly climb the learning curve with the help of mentors and investors that have "been there, and done that". On top of that, the odds of raising capital greatly improve given the tight application processes of such groups, that obviously only raise the best to the top, from the thousands of submissions they receive. Competition is naturally fierce to get one of these desirable spots, so a fine-tuned pitch and a good amount of networking are a must.

3.2.3 OVERCOMING THE INVESTMENT CHALLENGE

To conclude, in this section it has been described how one of the main problems related to early-stage startups is represented by their lack of focus on the right aspect at the proper time.

In particular, newborn companies seem to be more concerned about raising funds as quickly as possible than building a viable business model. Despite capital-raising being an important concern and a crucial milestone in startups' lifecycle, it appears critical for founders not to underestimate the importance of designing a sturdy BM – which will be vital for the success of their business in the long-run.

To clarify, startups should focus on building a sustainable business model before starting to look for funds; indeed, companies with a well-rounded market idea have a much higher chance of getting external funds.

Nevertheless, overcoming the “investment challenge” should still be a priority, particularly at early stages. What appears even more important of getting funded, though, is finding the funding method which best suites the company’s BM.

For instance, startup CEOs should never underestimate the non-monetary advantages – and disadvantages – which may arise from choosing one funding methodology over another.

In this chapter have been underlined two of the major obstacles startups usually face at the very beginning of their lifecycle: building a repeatable and scalable business model and choosing the best-suiting funding strategy.

In the next section will be briefly explained the typical phases startups may go through and which are the most important aspects they should focus during each of these phases.

3.3 TYPICAL STARTUP PHASES

In this chapter, we enucleate the most common steps startups take during their lifecycle with particular attention to the typical mistakes to avoid.

Companies enter their “business lifecycle” in the very moment they decide to set up a business. This period will extend from the ideation of the business to the startup phase and, if hopefully, through to the growth and maturity phases.

Even though business is never easy or completely predictable, being aware about the existence of these stages of the business lifecycle may result crucial as each phase of the cycle presents a unique set of obstacles to deal with and overcome. Flexibility in planning the business strategy and adaptability of the business model are, thus, two of the main characteristic a startup CEO should try and pursue in order to maximize his probabilities of success. In particular, different approaches are required for different goals; i.e. what may be required to achieve a good market penetration will probably be completely different from what may be required to achieve a sustainable growth rate.

The recent Startup Genome Report¹⁸ reports how an estimated 90% of those startups that fail do so, mainly, due to self-destruction. The report clearly states how “It was their founders’ own bad choices or lack of preparedness rather than so-called “bad luck” or market conditions that were out of their control”. Understanding which is the position in the business lifecycle a business is going through, just might help it to stay a bit ahead of the game and improve its odds, as the potential challenges and obstacles may be anticipated.

As a business grows and develops, so too do its aims, objectives, priorities and strategies – and that’s why an awareness about what stage of the business lifecycle it’s currently in can be helpful.

¹⁸ The 2017 Global Startup Ecosystem Report; Startup Genome

3.3.1 SEED & DEVELOPMENT

The *seeding* phase is the beginning of the business lifecycle, before the startup is even officially in existence. In this initial period, there's a business idea and the founder is ready to dive into business. But before everything else, a study on the viability of the idea should be undertaken.

At this stage, the most important task is gathering advices and opinions regarding the potential of the business idea from as many sources as possible: friends, family, colleagues, associates, or any industry specialists. Ultimately, the success of a business will come down to many factors – including the CEO own abilities, the readiness of the market he/she wishes to enter and, clearly, the financial aspects.

To some extent, this could be called the “soul-searching” phase. It's where entrepreneurs must take a step back and consider – as objectively as possible – the feasibility of their business idea, and also ask themselves if they have what it takes to succeed.

3.3.2 STARTUP

Once the business idea has been canvassed and has been tested that it is ready to go, it's time to officially launch the startup. Most entrepreneurs believe this is the riskiest stage of the entire lifecycle. In fact, it is a wide-spread idea that faults made at this stage impact the company for years down the line, and such mistakes are the primary reason why almost 30% of startups do not survive longer than 4 years.

Adaptability is one of the few things that matters at this stage, and the majority of effort should be spent in fine-tuning products or services based on the initial feedbacks of the first customers. It can even get to the point where so many changes are done to the starting product that a lot of the original features may be replaced. The most important thing here is staying focused. Listening to feedbacks, tweaking the product/service and adapting to the demands is the primary key to success.

3.3.3 GROWTH & ESTABLISHMENT

If a company survives until this stage, the business should be generating a reliable source of income and frequently taking-on new customers. Cash flow starts to expand as periodic revenues help to cover operative expenses, and profits will start to improve slowly but steadily.

The biggest challenge for founders at this stage is in distributing time between a complete new range of issues requiring attention: managing increasing levels of revenue, attending to customers, dealing with the competition, accommodating an expanding workforce, etc.

Hiring smart people with harmonic skillsets is also essential to leverage a company's potential during this phase, that's why any founder should be spending a lot of time directly involved in the selection process.

It is indispensable that entrepreneurs start to come into their role as head of the company at this stage. While they'll still be on the front lines, they need to be aware of how your expanding and highly qualified teams are going to be taking-over a great portion of the tasks that were previously under CEOs' control. Establishing a real order and cohesion as teams are mobilized according to clearly defined and communicated goals is another important priority here.

3.3.4 EXPANSION

At this stage, founders often feel like running their business is almost a routine. Staff is handling the areas that they no-longer have the time to manage, and the business has now decisively established its presence within the industry. Here is the point when some might start thinking about capitalizing on this level of stability by expanding the horizons with broadened offerings and new geographical aims.

Most businesses in this stage present rapid growth both in revenue and cash-flows as the outlines has already been established. Nevertheless, in business, if you are not moving forward you are moving backwards, and without a constant, wish to expand, contentment can set in, and you might get caught off-guard.

There are, as always, two sides to this coin, with the other being the risk of expanding too quickly. While there is no “perfect prediction” and it is quite hard to get a clue about what will be the results of a company’s actions, CEOs can give themselves the best possible chance of sustained success through meticulous planning.

More than that, while having an effective business model is certainly a huge advantage, it is not a guarantee that it will still work elsewhere within other markets, or that new projects will result in the same success. The entrepreneurs’ main task is, indeed, to take-on new challenges as they look to constantly expand, but they should also be

measuring their risks and doing their best to secure the company for all eventualities.

3.3.5 MATURITY & POSSIBLE EXIT

Companies which successfully crossed the expansion stage of the business lifecycle, should be seeing steady profits year-on-year. While some companies will continue to grow at a decent pace, others will inevitably struggle to enjoy those same high growth rates.

It could be said that most entrepreneurs in this stage are faced with two choices: push for further expansion, or exit the business. Those who decide to further expand, will need to ask themselves the same questions they did at the expansion stage: Can the business sustain further growth? Are there enough opportunities out there for expansion? Is the business financially stable enough to cover an unsuccessful attempt at expansion?

And, even most importantly, are they the type of leader who is up for the task of further expansion at this stage? As a matter of fact, many companies change leadership here, bringing in a seasoned CEOs who is more fit to navigate the new challenges.

Many also try to move on through a sale. This could be a partial or full sale, and, depending on the company type, the negotiation may be a whole new journey in itself.

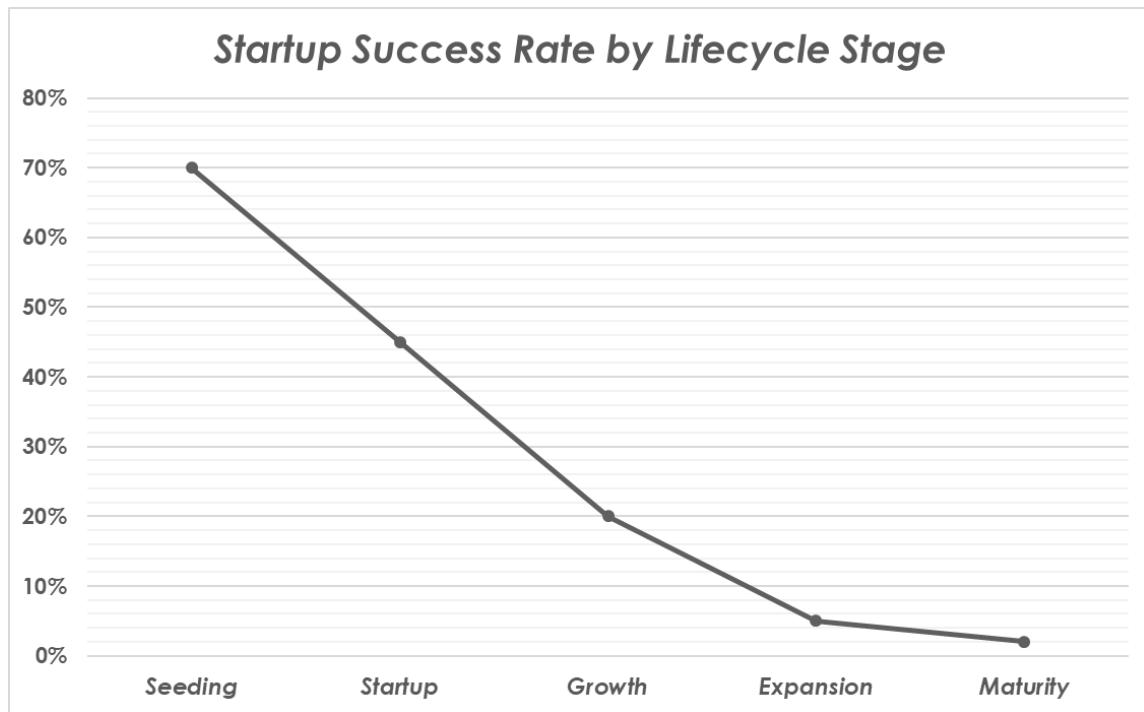


Figure 34 – Startup Success Rate Divided by Lifecycle Stage; Personal Processing from EUROSTAT (2015)

3.4. CONCLUSION: A DYNAMICITY FRAMEWORK

To conclude, it appears important to underline how not all startups will experience every stage of the business lifecycle, and those that do may not inevitably experience them in the same order. To

clarify, some businesses may see enormous growth right after startup, and the founders may decide to cash-out right away, jumping straight to the “exit” stage.

For many companies, however, there will be some sort of similarity to the stages here define, and being aware of this possible pattern may help CEOs to predict what is coming next and how to best prepare to maximize the chances of success.

To conclude, one of the most important aspects which emerged from this last section is the concept of the dynamic nature of startups.

In particular, the definition of startups provided in the previous chapter (*See Section 3.1.5*) underlined how the very nature of these organizations revolves around the notion of dynamicity.

This characteristic becomes, thus, extremely meaningful not only to define these actors, but also when studying their peculiar traits and their lifecycle (*See Sections 3.2 and 3.3*).

In the vast majority of economic theories, firms and organizations are described as economic actors seeking some sort of balance. Regardless of the variables that come into play for building this *equilibrium* – demand and supply, costs and revenues, internal market and exports, etc. – the circumstance where organizations are basically static is a redundant.

Through the study of startups’ behaviors and prominent features, however, it clearly emerged that they couldn’t be framed with a static

definition – this is also one of the main reasons why a “new” definition of startup has been provided.

In this respect, startups should be considered as economic actors sharing similar *modus operandi* which – often – can be found experiencing one phase of a dynamic framework.

For clarification sake, the following chart (*See Figure 35*) provides a possible example about how such a framework should be elaborated.

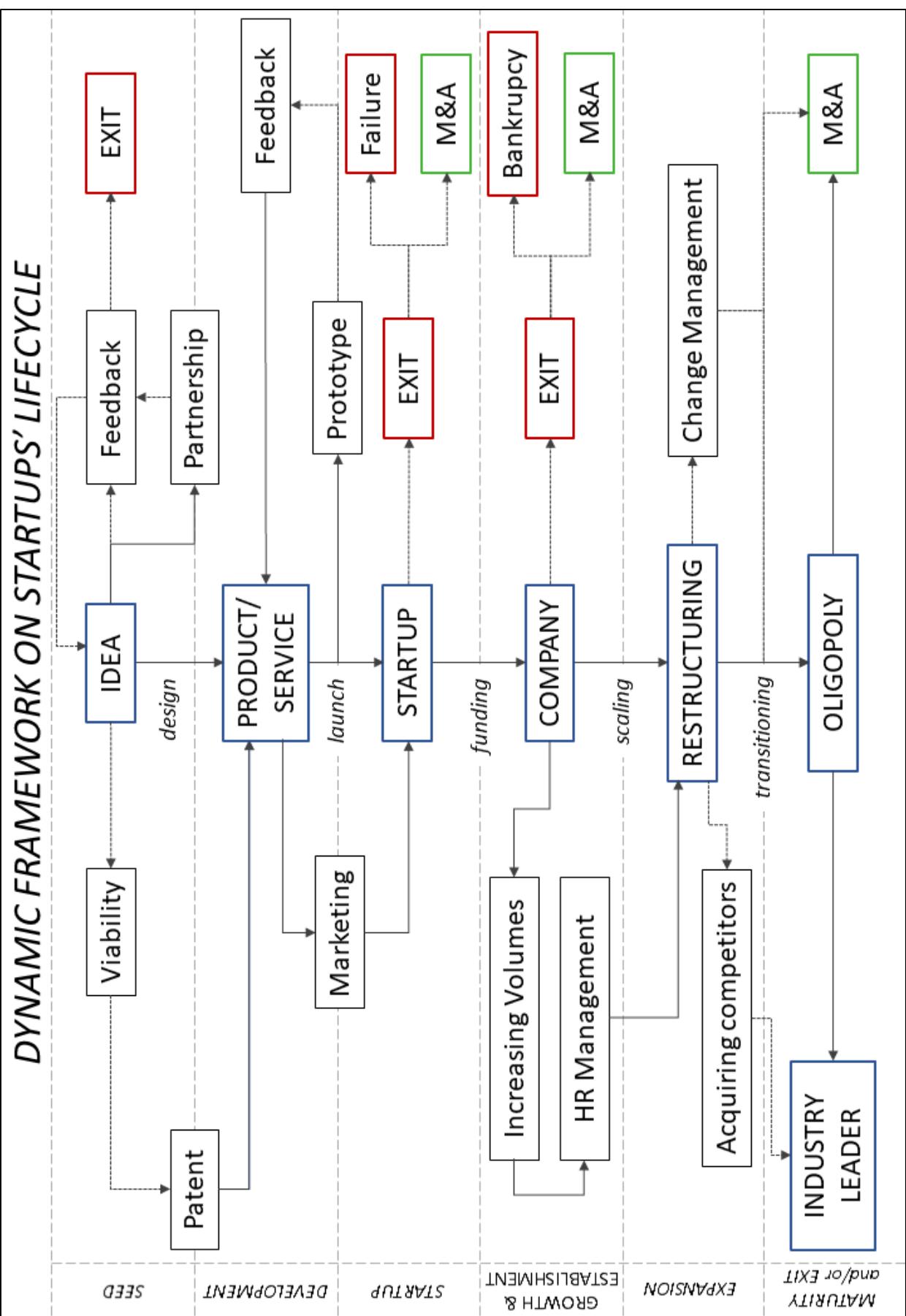


Figure 35 – Dynamic Framework on Startups' Lifecycle; Personal

The previous figure, as said, is an example framework describing the dynamic nature of startups.

On the left are defined the *phases* – or “typical startups phases” (for more references *See Section 3.3*) – which most startup experience. The *blue* path represents the “change of status” of startups, meaning those organizational rearrangements which – typically – most startups experience. The *red* and *green* sections represent, namely, “positive” or “negative” exit options, where for positive is meant “exit option which, usually, don’t entail losses” and for negative “exit option which, usually, entails losses”.

The continuous arrows, then, are used to describe the mainstream alternative paths which startups may take to reach the next phase. On the contrary, discontinuous arrows have been used to describe less common paths which lead to the next phase in the lifecycle.

It appears important to note that most of the paths can sometimes go “backwards” meaning that it is possible for companies not to go to the next phase in order to experience again one or more previous phases.

Thus, startups need to be considered as economic actors moving across this diagram, but which don’t necessarily go through it following the same pattern or reach the same conclusion.

4. MICROECONOMIC ANALYSIS

In the next section will be developed a Microeconomical study over a sample composed by nine startups.

The companies in this analysis will be divided by industry into three groups: Audio Streaming Services; Travel Fare Aggregators; Creativity-Sharing Platforms.

In particular, for each industry, will be analyzed three companies: a case of success, a case of failure and a case which is still *work-in-progress* (WIP).

The analysis and comparison between similar companies which operate in the same industry but faced very different results, will be incredibly helpful to understand which are the correct variables to take into consideration when analyzing a startup and its probabilities of success.

Moreover, by comparing success stories with failure ones, we'll be also able to monitor the impact of specific variables on real scenarios, obtaining more precise measurements of such variables. Data and parameters which have been built and analyzed in this section will then be used for the construction of the final model.

4.1 AUDIO STREAMING SERVICES

The term “*streaming*” refers to a – rather – new technique for moving data from a source to another in a way that makes it easy to process as a stable and constant stream. Streaming technologies progressively grew in importance with the development of the Internet as most users do not have the means for downloading large files quickly. In a nutshell, through streaming, the user browser or plug-in is able to display data before the actual file has been transmitted.

For streaming to work properly, there are two basic requirements. First, the owner of the data must collect and send them and as a steady stream to an application that processes and converts them to sound or images.

Then, the streaming client must be able to store excess data in a so-called *buffer* – if they are received more quickly than required. If the data doesn't come fast enough, though, the performance of such data will not be smooth.

Hence, basically, *streaming* means delivering data – which often are audio or video – to specific devices through the Internet. The main advantage provided by this practice lies in the fact that, through streaming, users do not need to download “heavy” files or applications in order to interact with content, the only thing that's needed is a decent Internet connection.

The Audio Streaming Industry started developing between 1993 and 2005 when the first *disruptors* of the enormous audio industry made their appearance.

Internet Underground Music Archive (IUMA), Last.fm, Napster and – later – Pandora Radio all launched in this short period while criticism from the industry continued to grow as artists and Record Labels felt marginalized and saw their margins shrinking.

Since 2005, a plethora of new companies had appeared in an industry that, less than ten years before, was considered almost impenetrable by competition. To name a few, SoundCloud, Bandcamp, Apple Music and the industry-giant Spotify all launched in the last fifteen years and, in less than a decade, already owned the vast majority of the market.

The following represent just an example on how some of these companies were able to make a 130-years-old industry collapse in just a decade while others were ultimately swallowed by the same mechanism that crashed huge companies such as Capitol Records.

a) RDIO

On August 2010, Skype founders Niklas Zennström and Janus Friis founded Rdio, an online music streaming service that offered ad-supported free streaming and ad-free subscription streaming services in more than 85 countries. They entered an industry where competition was fierce and they had to face very strong opponents such as Napster, MOG and Spotify. On September 2013, Rdio developed a music-recommendation feature that delivered personalized albums, stations, and playlists to users; a year later they also introduced some free streaming options.

2015, however, saw the beginning of their collapse as they were filed for bankruptcy, and were forced to sell valuable assets as well as intellectual property to a main competitor, Pandora.

As part of this transition, the Rdio service shut down while some employees were transferred to Pandora, which introduced an "extended" experience incorporating their IP in 2016.

It appears clear that Rdio was to be considered as a forerunner in the music streaming industry, competing directly with Spotify. Actually, when comparing them, Rdio was considered a superior product. So why is it that Rdio is now a case-study on "those who failed" while Spotify grew at an

exponential rate? There are, basically, three main reason to explain that.

(i) They focused on non-core activities.

Technology-wise, Rdio had been better developed than its competition; the product was widely admired for its design and features, though it may have been over-engineered.

Most of the features were extremely underexploited by its users who didn't even notice them. This resulted as a tremendous waste of resources which could have been better allocated in practices such as marketing.

(ii) Rdio had no Brand Awareness.

In a nutshell, it was an excellent product, with poor marketing.

For the whole launch-year (2010), everyone was talking about the upcoming Spotify while only a few enthusiasts even knew what Rdio actually was.

The company had been out in the market for 12 months already at that point, while Spotify hadn't even launched yet.

Former Rdio employees claimed that, although it was an excellent product, they had no marketing activities in place at all. Spotify took advantage of this, and dominated Rdio in the market.

Nevertheless, marketing isn't the only place Rdio was crippled on; their business model wasn't optimal as well, which brings us to the third reason why Rdio failed.

(iii) They didn't realize the power of Freemium.

At the time, Rdio only offered a paid version of their product while Spotify clearly understood the tremendous power of the word "Free": Giving away something for free can create demand for something else.

Basically, Spotify offered their ad-based version for free, users joined in flocks and they suddenly realized they wanted more: and their paid version was the perfect solution. Why should have these customers, which already knew Spotify well, even to bother with trying Rdio's superior product?

b) SPOTIFY

Spotify is a music streaming service that officially launched back in 2008 and has been developed by the Swedish startup Spotify AB in Stockholm.

Its business model is pretty straightforward: from one hand, it guarantees record labels and media companies the safety of the content provided while, on the other, it truly understood the power of a *freemium* service. Meaning that basic features are free-to-use with the only inconvenience of advertisements, while additional features are offered through ads-free, paid subscriptions.

Their service is available in Europe, most of the Americas, Australia, New Zealand, and Asia. It is available for most devices, tracks can be browsed through or searched for by parameters; users can create and share playlists, tracks on social media, and make playlists together with other users.

It also provides instant access to more than 30 million songs.

By June 2017, it counted more than 140 million monthly active users with more than 60 million paying subscribers. There's no doubt about it, Spotify has ultimately won the race for the Audio Streaming Industry, but which have been the main aspects of its success and how did it leverage on them?

(i) They focused on a market they knew well.

Spotify chose a relatively small market segment to focus-on at their start: Sweden. As CEO Daniel Ek points out “Had we started with the US there’s no way we would still be around. The US market just wasn’t ready.”.

For as straightforward at it may seem, having a crystal-clear idea about which are your customers, how they need your product/service to be tweaked and which is the competition in your starting niche is one of the most crucial early-steps for a startup.

Spotify was a Swedish startup, with – mainly – Swedish employees which knew extremely well their Country’s market; they would have had no reason at all to start in another market – say US –, and they nailed this first decision.

(ii) They chose collaboration over competition.

The audio industry, despite the increasing trend of streaming, was still – and still is – a legally-fortified stronghold, with four major companies detaining the rights over almost all the music records ever produced

(as well as on those which would have been produced in the ears to come).

Spotify knew it well, and instead of starting a business war against these giants they set on a table and discussed together about their project. This, despite being the toughest obstacle they had to overcome, resulted in a downhill path after reaching an agreement.

What they did, basically, was tackling the worst issue that would have arisen down the line as their first step, thus gaining an unmatchable advantage over their numerous competing startups.

(iii) They invested on core-assets.

The third aspect which fostered Spotify's incredible success was their foresight on core-assets.

On one hand, they built their whole business model around the concept of freemium, which resulted as a tremendous choice.

They understood the concept that they could give-away something for free – their ad-based subscription – to attract and retain customers which would then be

willing to pay to satisfy their increasing need for the paid service.

On the other hand, they redesigned the music industry from within. Instead of tracks, they made *playlists* the fundamental unit of their service, understanding how this would have had huge appeal on their customers.

They banked on this idea, developing a system capable of handling hundreds of thousands of playlists in seconds, which resulted in tremendous customer satisfaction rates right from the start.

In retrospect, the almost 50 Mn. \$ they risked on this single idea clearly resulted a wise investment.

c) *TIDAL*

Tidal is another subscription-based music streaming service that combines lossless audio and high-definition videos with selected content and special features. The service was launched by the company Aspiro AB, based in Norway. Among Tidal's offerings are concert livestreams, ticket giveaways and other experiential events like listening parties and meet-and-greets with artists.

In 2014, Aspiro AB first launched Tidal in the UK, the US, and Canada.

In January 2015, Aspiro was purchased by Project Panther Bidco Ltd. (owned by the singer Jay-Z) for 56.2 Mn. \$ and, by 2016, the service was available in 52 Countries worldwide.

Jay-Z explained in an interview with *Billboard* the reasons which brought him to start this project. His idea was creating a new platform which put artists – and not corporations – in the center. What differentiates Tidal from other similar services is that they offer a studio-like audio and video quality for those who “really enjoy music and want the best out of it”.

Feature-wise, he wanted the company to focus on a more “intimate” experience for the users which are able to purchase concert tickets directly on the platform, they can see concerts through livestreams or even “meet” their favorite artists.

“We wanted to create a parallel tool to mainstream platforms, a tool for music-addicts, for those who save money for concerts and who dream to meet their loved artists. Our idea was to create a space where artists would receive their rightful recognition while fans had opportunities which no-other platform ever offered.” He said.

Despite its starting success, Tidal closed its original Aspiro offices in Stockholm in 2015, firing all Swedish employees as well as the CEO Andy Chen.

Since then, two other CEOs passed-by and the company is currently without one.

In 2017, the US mobile carrier Sprint declared that they were buying a 33 percent stake in Tidal for over 200 Mn. US \$.

Undoubtedly, Tidal has raised quite a lot of attention in the last two years; many are those who praise its superior audio quality and its unique features while others critique their focus over profit for artists.

It appears clear that the company is now facing a breakpoint: it has to clarify its aims, its business model and solidify its market presence and brand recognition.

Nevertheless, there are some major aspects about the company which need further clarification and which may result in its success or in its ultimate downfall.

(i) Sustainability of the business model.

Tidal, as previously mentioned, developed a business model which focuses on “paying the highest royalties to artists in the Media Streaming industry” as Jay-Z says.

However, the concept of bypassing Lobbies and Corporations in order to obtain higher margins for artists may result to fans as a greed matter, therefore

contradicting the whole concept of “music for real lovers” which the platform revolves around.

On top of that, the business model – in particular their *lossless* option – may have been overpriced. This results in higher attraction for investments, which see higher profits than competition, but could easily lead to the company having troubles retaining more price-sensitive costumers.

Thus, the company has to clearly define in which direction to shift: on one hand, it has a wider market which could, possibly, choose it over the competition if it will present better-quality content at a similar price; on the other hand, it could decide to focus on the – way – smaller market-segment of those costumers which are keen to pay decisively more than other platforms for a service which offers them the added-value they’re looking for.

(ii) Branding and marketing.

This point is a direct consequence of the choice the company will do regarding the previous aspect.

In particular, Tidal is currently branded as “the world’s first music service with HiFi sound quality, HD

music videos and Curated Editorial by music journalists, artists and experts [...]".

It basically positions itself as a better alternative to other streaming platforms while it is undisputable that it has some serious disadvantages. For instance, they do not have any *free* service, they have a much lower number of tracks and artists available on the platform and they do not clarify which are their unique features in respect to their competitors.

Once again, their crucial problem is the lack of a clear direction for their product which, in the long-run, may result in a major failure.

(iii) Intellectual property.

The last aspect in analysis regarding Tidal is their lack of legal protection over their most sponsored unique feature: quality.

As a matter of fact, if it becomes a users' need, other major platforms – as Apple Music, Spotify, Pandora, SoundCloud – will easily implement a similar product-line on their service.

Tidal must focus on developing the concept of quality outside the merely technical aspect of HiFi sounds and

HD videos as they are aspects which competition may easily enough replicate.

For the third time, the company should have the primary objective of deciding how to position itself on the market and, after this being done, they could more clearly understand their probabilities of long-lasting success in a fierce industry as the one they are into.

4.2. TRAVEL FARE AGGREGATORS

Another sector which faced enormous changes in the last 10-15 years has been travel.

Just at the turn of this Century, planning a holiday might have entailed a visit to the local travel agent or a good handbook guide. Now, thanks to revolutions in technology and high-speed internet, travelers can book their own flights and hotels directly online.

With the digital era, we became a generation of do-it-yourself (DIY) travelers, we plan, manage and book our trips online in a matter of minutes. Obviously, this tremendous change in an industry worth almost 7.6 Trillion US \$ (in 2016) has completely altered the balances and the way companies in the business operate.

The rise of internet-powered DIY-travelers has brutally disrupted the industry. Angelo Rossini, analyst at Euromonitor International underlines how “Traditional travel distribution in which high street travel agencies played a dominant role was revolutionized with online travel agencies and direct distribution through airlines and hotels’ websites acquiring a key role.”.

“Low-cost carriers and online travel agencies were the clear winner of the online travel revolution over the past 15 years, changing the way today consumers plan and book their trips.” He continues, “Tour operators suffered the rise of independent travel and are today embracing the online and mobile channels in order to stay competitive.”.

Although this trend killed off many travel agents, others have been forced to adjust to a completely changed marketplace, with the majority embracing *Travel 2.0* by introducing online bookings.

Among the biggest disruptors to the travel industry shine names such as Booking.com and, of course, Airbnb. Thanks to the rise of these sharing-economy-based companies, people have now the possibility to experience unique trips and holidays that they would have never been able to do just fifteen years ago.

Airbnb country manager James McClure says that “In Airbnb’s case, technology has also brought tradition into the mainstream. The concept of staying in people’s homes when travelling is not a new one and dates back many centuries, but what technology has been able to

is accelerate this to a fast-moving and easily-accessible global phenomenon."

Furthermore, the rise of technology has also opened new opportunities for small businesses in the travel sector, allowing consumers worldwide to stumble across a plethora of different alternatives through review sites, social media and the businesses' own websites.

In the following paragraphs will be analyzed three example of startups operating in this reshaped travel industry, with the aim of understating what made them succeed, fail and what is still a big question mark which needs answering.

a) VENERE (EXPEDIA)

One of the leading travel platforms of the last decade, Expedia, acquired Venere with the purpose of competing – in Europe – with Booking.com. However, Venere's small scale was no match for a giant like Booking.com and then, almost 9 years after having acquired it, Expedia decided to merge Venere's property on its Hotels.com website and let go of the weak brand.

Traffic from Venere's site is currently being redirected to Expedia and the former had officially stopped taking bookings in December 2016. The Italy-based booking site Venere was bought

by Expedia back in 2008 when the brand had an important presence in Europe, Middle East, and Africa.

The small company underwent a financial restructuring between 2001 and 2007 when the 60% of its stake was bought by the leading private-equity company Advent International. Later on, Expedia bought the entire shareholding and incorporated the brand, thus expanding its own portfolio by a remarkable 10,000 new properties.

Venere used to follow a similar business model to Booking.com: the *agency-based* model.

With the agency model, the online travel agency pays a pre-planned commission to hotels after a customer has stayed and customers pays the hotel upon the conclusion of their stay.

While Booking.com was able to reap huge benefits from this BM, Venere lagged behind.

What follows are the main reasons why this company, which operated with a business model which, in retrospect, has well-proven its worth did not have the success of its most close competitor.

(i) Scale.

Probably, the most crucial reason why Venere failed so quickly has been its lack of scale. The site was

launched as a “local hotel-booking website” which positioned itself as a sort of small-agency while Booking.com was launched as a global platform, with the idea of turning into the leading company in the sector. That’s one of the reasons why it quickly became the most popular accommodation-booking platform in the world with over a million yearly accommodations.

People perceived Venere as a localized brand, with small choice in terms of accommodation if compared with competition while Booking.com was perceived as a truly-global company with the best and wider alternatives available.

(ii) Branding and Anticipation.

As a direct consequence of the previous point, branding has also been a huge drawback for the once-popular Venere.

With Booking.com growing exponentially and gaining market quickly, the more navigated Expedia should have understood their crucial problems with branding and marketing.

The perception customers had of Venere, as already mentioned, was of a local and lightweight website, a small niche alternative to more popular websites.

Although this perception was a tough disadvantage for the company, they should have understood the possibilities that it opened up for the website.

Turning Venere into a truly niche platform, with features which the competition did not offer and an offering that aimed at more sophisticated tourism could have been an alternative worth exploring.

This, would have resulted in a major win for Venere: ending its direct competition with a way-too-powerful rival to anticipate future competitors in a market that, at the time, was relatively less concentrated.

(iii) Providing and added value.

Venere was a small Booking.com. It had all the characteristics of its direct competitor except for the scale.

The third, and maybe most crucial, problem the company had was their lack of unique proposition: they offered the exact same product that Booking.com offered but they didn't have the means to really compete.

Once again, focusing on smaller niches, developing a proper unique proposition for those markets and leaving the direct competition for mainstream tourism to the tougher Expedia could have resulted in an ultimate success of the small company that, by now, could be leading the sector of sophisticated and demanding tourism.

b) BOOKING.COM

The former startup Booking.com was designed as a travel fare aggregator website in the Netherlands. In 2005 was acquired by the US-based company The Priceline Group for 133 Mn. US \$. Their website now lists more than 1.4 Mn. properties across 226 Countries and books an average of 1,200,000 rooms per day.

After expanding its services in Europe in 2006, the company faced a tremendous growth which positioned them as the most valuable Internet-based company by 2012.

The incredible success of this company relies mostly on the digitalization of the travel industry began in the early 2000's.

Despite being an immensely-appraised platform, Booking.com receives a steady stream of customer complaints and negative reviews as well as constant critiques by "traditional" travel agencies.

The interesting story about this company lies in how did they manage to get started.

Basically, they had to face a problem which is very common for companies offering products as Online Travel Agencies (OTA).

Booking was in the so-called "Chicken and Egg" situation, which is a problem faced by two-sided market products.

In a nutshell, the issue arises when a company is positioned between two actors which have similar bargaining power, in this case hotels and travelers. They had to decide who to attract to their service and who they would have been generating money from.

From the consumer side, they won't find anything to consume unless producers existed. Producers (hotels), on the other hand, won't be encouraged to provide their product (accommodations) unless consumers existed.

The solution Booking.com adopted was to start with some kind of encouraging to one side to get going and attract the other one. They did it by simply offering their service to Hotels for free.

Once they generated enough content for travelers, they started creating the website on the consumers side and then, after succeeding at this, they started charging these Hotels for traffic.

The key of their success was, primarily, the scale of the aforementioned operation. By attracting an enormous database of hotels, they were able to drive huge traffic to their website which put them in a position where they were able to charge these hotels for that traffic that was generated because of them joining at first.

In the next paragraphs will be enucleated the three main competitive advantages that granted Booking.com the first position in industry.

(i) Business model.

What really differentiated the platform from its closest competitors was, definitely, the business model they adopted early-on.

They basically shifted from a *Merchant Model*, which most of the competition was using, to a so-called *Agency Model*.

The main difference is in the experience perceived by costumers: in the Merchant model, OTAs buy room nights from hotels at cheap prices and tries to sell them to costumers for as high as possible to maximize their margins.

With an Agency model, on the contrary, OTAs try to find the best-fitting room according to the parameters

selected by the user; these companies' main objective is to actually find the best solution for the costumer, maximizing his/her buying experience.

This process, in the long run, greatly increased customers loyalty towards the latter OTAs, allowing them to charge hotels for their unmatched service.

(ii) Proper marketing.

For the last 5 years, Booking.com has been the company which spent the most money (almost 50 Mn. US\$) in Google Ads.

This very heavy marketing practice allowed them to be the first alternative – and in many cases even the only one – that people think about when they're looking to program a trip.

On top of that, the company dedicated incredible energies in branding themselves as a truly-global travel agency, improving the value perceived by costumers which have been made well aware of the incredible number of alternatives Booking.com offers in comparison to other platforms.

(iii) Huge database.

The third aspect that made Booking.com such a great company, is to be found in its actual numbers.

Just a year after their acquisition from The Priceline Group, they launched their service in Europe where they started with no-market at all.

Instead of repeating the process carried-on in the US, however, they partnered with another OTA called ActiveHotels.com which allowed them to exponentially increase their hotels' database.

By doing so, their business in the Old Continent was pretty much downhill as customers were immediately attracted by such a convenient service. In a matter of months, the company was able to list more than 500,000 properties across Europe, while doubling the number of room nights sold through their platform in just 8 weeks.

c) IJENDU

The third case under analysis is represented by the Barcelona-based startup Ijendu.com.

Actually, Ijendu was born in early-2015 as a spin-off project of the company Citiface Management S.L., an IT and Development SME which operates in Spain since 2004.

As I personally had the chance of spending four months working in this company just six months ago, the characteristics that will be analyzed hereafter are a mix of both data collected (the same way data were collected for the other 8 companies in this study) and the personal experience I gained by working in the company itself.

As previously mentioned, Ijendu.com develops as a spin-off project from Citiface Management S.L. in 2015; the idea behind it was to build what CEO Olakorede Adebayo Ajayi describes as “[...] the travel platform of the future. We designed Ijendu with some very basic features in mind: flexibility, exposure to local businesses, cost-efficiency and added value; all embedded in a sharing-economy environment.”

The concept behind the company is pretty straightforward: a new travel platform based on a sharing-economy model, where local businesses can get the exposure they usually struggle to get on most travel platforms and where – ideally – travelers will find more authentic solutions for their trips.

Although the project is still in early-development (it will conclude its seeding phase in September 2017), it is already well

structured and VCs are becoming more and more interested in its potentiality.

Between June and August 2017, the company was able to collect 2.4 Mn. € in 1st round seeding while a further 15 to 20 Mn. € will be invested once the platform reaches its *beta* phase.

Ijendu represents a particularly interesting reality for a number of reasons. In particular, its business model is designed to be completely asymmetrical if compared to the rest of the market.

As co-founder Maria Teresa Perez Moreno puts it “Flexibility is the key. We want to provide customers a tool which will allow them to customize every aspect of their trips, from their stay to their transportation, from their meals to the shopping and events they'll do. The platform itself is designed with a double purpose in mind. On one hand, it enables travelers to book everything in one go: their transportation, their accommodation, discount coupons from local shops, events and timeout, all in one platform. On the other, it gives local businesses the chance to promote themselves for free to a much wider audience.”

She continues “[Ijendu] is also designed with a sharing-economy model in mind. Every one of us has assets which are underexploited in our day-to-day life, from a bike we don't use anymore, to a beach-house we only use three times a year or a

deep knowledge of the cuisine or the history of the city we live in. We deeply believe that what will drive the economy of the future will be the sharing of such assets, and Ijendu is specifically designed with the same idea."

Ijendu may seem yet another platform like those which already are in the market; however, its unique proposition may be able to push it forward than it may seem at a first glance.

What makes this platform stand out from its fierce competitors, hence, is to be found in the characteristics that will be analyzed in the following paragraph.

(i) A business model driven from value.

As previously said, what the company – and its investors – are betting on, is to be found on its business model.

The whole idea of enabling people to make some extra money from what they already have is not new to the market: the industry giant Airbnb built an empire on this very same concept.

What is truly new, however, is the value proposition the company offers to its customers: they'll be able to

book spaces, experiences and accommodation which, until its release, will be completely inaccessible.

Giving people the means to find exactly what they're looking for, without "forcing" them to stick to mainstream solutions is something that has proven to be extremely attractive.

On top of that, the company will get its margin on both sides of the transactions: it will charge a percentage on both customers and hosts (or service-providers), and the first feedbacks it has been gathering on both sides are extremely positive.

(ii) Added value.

From the previous point, we can easily depict the second characteristic worth analyzing.

As Ajayi says "[one of] the most crucial things for Ijendu to succeed, is to provide something that people really need. We conducted almost one year of analysis about what folks would like to see in a travel platform, and what resulted was very straightforward: they don't want problems.

For as easy as it may seem, this happens to be the most common complain to the most used travel

platform. With that in mind, we designed Ijendu to make booking and managing trips (being holidays, business trips or daily trips) as easy as possible”.

He continues “we asked ourselves and hundreds of other people what could make us chose Ijendu over, say, Airbnb. What resulted was a platform capable of handling every aspect of the stay as smoothly as possible. That’s how Ijendu was born.”

Despite the skepticism and the infancy state of development, the platform is in good shape and the company is already seeing its first transactions.

(iii) Marketing and development.

Last but not least, what could make Ijendu a rising star lies in its team capabilities.

Citiface Management S.L. is, primarily, an IT company and the competences of its 10-years-experienced team are extremely valuable for the development of such a complex platform.

On top of that, CEO Ajayi has been developing extremely innovative and successful digital marketing tools and software for the last 5 years.

The deep expertise over two major aspects of the project – marketing and development – is already baring its results.

No doubt about it, the company has been doing its homework; in less than six months from now, however, we'll be able to see if they'll achieve their – rather – optimistic objective of 50.000 daily transactions in the second quarter after *beta* phase.

4.3 CREATIVITY-SHARING PLATFORMS

The third – and last – industry in our analysis regards the creativity-sharing platforms and, in general, the whole *crowdfunding* system.

With the term “*crowdfunding*” is identified a process in which individuals commit money and other resources to fund projects initiated by other people or organizations.

Typically, crowdfunded projects include creative works, products, nonprofit organizations, businesses, or donations for a specific purpose. Crowdfunding usually takes place through an online

portal that handles the financial transactions involved, and may also provide additional services such as media hosting or social networking.

In a nutshell, crowdfunding is a “donation-based fundraising for businesses or creative projects, typically via an online funding portal”.

Most crowdfunding projects offer contributors unique rewards, which may vary based on the amount of money donated.

Such rewards may include copies of a creative work, products created with the funding, special or personalized incentives, or public recognition.

In brief, five main models of crowdfunding exist; and they are:

- *Equity-based crowdfunding;*
- *Reward-based crowdfunding;*
- *Debt-based crowdfunding;*
- *Litigation crowdfunding;*
- *Donation-based crowdfunding;*

Equity-based crowdfunding represents a joint-effort made by individuals to support the cause of other people or any other organizations in the form of equity.

Reward-based crowdfunding, also known as the non-equity crowdfunding, has been extensively used for funding campaigns like supporting software development, promoting of motion pictures, aiding scientific research and development of inventions. Those people funding such projects are basically investing a – usually – small amount of money with the hope of returns from these projects.

Debt-based crowdfunding, also known as "*Peer to Peer*" crowdfunding, is a model where borrowers create campaigns to fulfill their financial needs, and lenders contribute towards the goal for what is, basically, an interest.

Litigation crowdfunding is a type of crowdfunding in which a claimant reaches out as many people as possible to get funds for a court case. This plaintiff asks money either in the form of a donation or gives a reward in return. This model is typically used in regard of monetary litigations and, if the claimant wins the case, the investor often gets more than what he has invested.

Donation-based Crowdfunding is the less-used model; it basically entails raising funds from individuals to support personal or social causes, its peculiarity is that it typically doesn't involve any returns for investors.

Crowdfunding has lately become one of the most popular ways of funding independent projects; startups are making a wider and wider use of such methodology to get the funding they need without the issue of selling-away equity.

In the next paragraph will be analyzed three cases about companies which developed as crowdfunding platforms in the last years.

a) QUIRKY

The first company in analysis for this last section of the chapter is Quirky.

The company was a startup launched back in 2012; in brief, it was a platform that crowdsources inventions.

As one of the first services of this kind, Quirky was able to raise more than 200 Mn. US \$ in its first 2-3 years of business but ended up firing almost half of its employees and filing for bankruptcy by 2015.

What for many sounded unexpected, are the reasons behind the collapse of a company that had a huge potential and managed to nail almost every aspect a startup should have.

Just to clarify, Quirky had an extremely capable founder, a valuable product, top-tier investors who believed in the company, a broad of directors packed with brilliant people, an

incredibly high user engagement and a very competent team of employees with very diverse backgrounds.

As already mentioned, the company was expected to skyrocket in a matter of years but, somehow, something down the line managed to cripple and – ultimately – destroy this incredible company.

Taking a step back, Quirky was a platform designed to enable users and companies to create and invent new products while crowdfunding to get their idea off-the-ground. The platform was praised by its customers, its investors strongly believed in the company and, for the first three years it was growing at a good pace.

What follows are the three main reasons about why Quirky failed while other very similar platforms – like Kickstarter – succeeded.

(i) “Broken” business model.

Among the main reasons why this company failed, their business model was the core one.

Quirky was a platform ultimately built with speed in mind: acquiring thousands of ideas, selecting the best ones with a high-speed voting system, crafting beautiful items, marketing, and customizing for major retailers.

The idea was pretty straightforward, but it didn't work.

The core problem is to be found in iteration. The company didn't have the physical time to collect feedbacks and improve its products according to costumers' suggestions. While it launched some products with clear potentialities, it didn't have the time to go back to those products, tweak them and tacking them back to the market.

The direct cause of this huge problem was their over-the-top business objective; the company aimed at pushing more than 50 new products to the market every year, which means a brand-new project every week.

While this pace may have been quite inspiring for its employees, it wasn't sustainable by any means.

(ii) Lack of product focus.

As a direct consequence of the previous point, Quirky didn't focus on any product at all.

While surfing through its products, costumers were left with nothing but confusion.

Although this huge number of products launched every month helped in building a substantial costumer-

base, it wasn't designed for retaining such costumers.

Even when people actually purchased/funded a project on the platform, they didn't receive any after-sales opportunity to suggest improvements, report bugs or ask for clarifications.

On top of that, those products which could have had some potential – like the Quirky Aros air conditioner – didn't have a chance to be upgraded to exceptional products.

(iii) Branding.

Last but not least, branding may become a problem as a consequence of the lack of product-focus. Quirky's costumers started asking themselves things like "what does the company stand for" of "why should I choose it over, say, Apple".

The lack of processes aimed at improving brand awareness and customer retention led to a complete lack of added-value perceived in Quirky's products.

Although the company tried to explain it as a focus over the inventors rather than over products, it ultimately didn't work.

b) KICKSTARTER

Kickstarter is corporation based in New York that developed a crowdfunding platform focused on creativity. The company's stated mission is to "help bring creative projects to life".

In its 8 years of business, Kickstarter has received more than 1.9 Bn. US \$ in pledges from more than 9.4 million backers to fund 257,000 projects.

People backing Kickstarter projects are normally offered tangible rewards and/or experiences in exchange for their pledges. This business model, despite looking innovative, can trace its roots back to the subscription model of arts patronage widely used for more than 600 years across Europe, where artists would go directly to their audiences to fund their work.

The company was launched in 2009 by Perry Chen, Yancey Strickler, and Charles Adler.

The business model adopted by the company is pretty linear: project creators choose a deadline and a minimum funding goal. When – and if – the goal is met by the deadline, funds are collected while if this doesn't happen funds remain in the "backers" accounts (which acts as a kind of assurance contract).

Kickstarter then applies a flat 5% fee on the total amount of the funds raised by projects which reach their goals.

Unlike many forums for fundraising, the company claims no ownership over projects and works they produce.

From the analysis of the company, the following main reasons for its success can be depicted.

(i) Business model.

At the core of Kickstarter's success there's its very linear but extremely powerful business model.

The real strength of this company is not in the fact that ordinary people or SMEs have a chance of getting their ideas founded – relatively – quickly, it is because it allows to do a “test the proof” of a concept in a profitable way.

What it means is that successful ideas on Kickstarter have an impressive chance of getting VC investments.

The concept is pretty simple: instead of theoretical statistics over a product, VCs have a clear idea about the appeal a concept may have on the market; and they have such data from customers willing to pay for a good which is not in production yet.

(ii) Community engagement.

Besides its terrific business model, the company managed to do an incredibly good marketing.

In a matter of a couple of years, a good number of early-adopters, innovation enthusiasts and “curious” people came to know the platform and keep waiting every day for that “amazing idea” they will put their money in.

The sense of community behind Kickstarter projects is extremely high, backers feel united by those ideas they find interesting and act as an amplifier for those same ideas.

In brief, the company built a close-knit community which is very sensitive about the kind of products promoted on the platform. As soon as these fans discover a project that moves them, they'll start to talk about it with like-minded friends of them, promoting a virtuous cycle that exponentially increases that project's reach.

By doing so, they know they'll have a better chance of getting the product they're interested in as they increase that product's odds of reaching its “funding goal”.

(iii) Foresight.

The last crucial aspect for this company's success has been, so far, its ability to analyze and predict the chances of success for its projects.

In particular, Kickstarter decides if a project should get major exposure – by appearing in the most viewed pages – or not.

This aspect entails a great knowledge of the market as well as of the platform's users and it is crucial for the company to chose wisely its "*Projects We Love*" to maximize the probabilities of success and – consequently – the platform's appeal.

c) INDIEGOGO

Back in 2008, Indiegogo another crowdfunding website, was founded by Danae Ringelmann, Slava Rubin, and Eric Schell. Indiegogo, like most crowdfunding platforms, allows people to solicit funds for an idea, project or business.

The site adopted a rewards-based system, meaning that whoever is willing to help fund a project or product can donate and receive a gift, rather than an equity stake in the company.

From 2016, the company also offers equity-based campaigns which allow unaccredited investors to participate with equity stakes.

In 2014, Indiegogo also launched Indiegogo Life (later renamed Generosity.com), a service that allows to raise money for emergencies, medical expenses, celebrations, or other life events.

In the crowdfunding industry, Indiegogo competes directly with the previously analyzed Kickstarter. Although providing similar services, the two platforms present some pretty substantial differences.

What follows are the main aspects which characterize this 15-million-user platform.

(i) Partnership and support.

Unlike its competitor, Indiegogo offers support from experienced professionals and exclusive partnerships which help boosting campaigns success.

From manufacturing to fulfillment and support, the platform helps entrepreneurs contact those services-providers which they may need down the line.

This peculiar aspect may result in a great attractive for those founders which find themselves stuck in the

typical situation where they need support from dedicated companies (manufacturing, design, marketing, post-sales, etc.) and they struggle to find it. Besides its value, this feature should not be considered by the firm as a core-capability since it may be easily replicable by its competitors.

(ii) Pre- and post-campaign tools.

Another crucial aspect which characterizes the company, is represented by the tools which provides to entrepreneurs both before and after the campaign.

In particular, Indiegogo allows to capture customer emails during the pre-launch phase of a project; then, it also provides equity-crowdfunding options which enable to raise more funds than regular crowdfunding while maintaining control over the company.

Altogether, these tools represent a huge asset for anyone seeking to launch its product/service as they help in those which, for many startups, are considered as the most dangerous phases.

Nevertheless, such tools may result as threats for the company overall as they may be seen as part of the causes of a company's failure.

(iii) Flexibility.

Unlike its counterpart Kickstarter, Indiegogo allows a flexible approach to crowdfunding.

Actually, this is the principal reason why more than 15 million people prefer the platform to the former one.

As a matter of fact, Indiegogo allows inventors to retain funds even if their funding-objective is not reached, to get those funds to and from almost every Country in the world and without any approval process.

This flexibility, however, doesn't come without downsides. In particular, it is far more probable – as a backer – to fund a project and lose your money on Indiegogo than Kickstarter.

Still, the platform is trying to take its place in the crowdfunding arena and the more it will differentiate from other major companies, the more it will have to rethink about its business model.

4.4 PARAMETERS DEFINITION

In the previous chapter (*See Sections 4.1, 4.2 and 4.3*) have been analyzed 9 companies, divided by industry, which have been either successful, unsuccessful or are still in a critical phase of their lifecycle (for references to a startup typical lifecycle *See Section 3.3*).

The study of these very different realities proved extremely valuable for the objective of this thesis as it enabled a deeper understanding of the major reasons which have driven such companies towards their success or failure.

Furthermore, structuring the study of these companies as a sort of comparative analysis, made possible to identify some major success/failure drivers that companies presented regardless of the industry they operate in.

In the following paragraphs will be, thus, conducted a cross-industry analysis for the three typologies of companies previously mentioned: successful, unsuccessful and “Work-In-Progress” (WIP).

Hence, this following study will have the primary objective of identifying some meaningful cross-industry drivers starting from the analysis conducted in the previous chapter.

These drivers will, then, be used for the construction of the final model presented in the last section (*See Section 5.1*).

4.4.1 CROSS-INDUSTRY SUCCESS ANALYSIS

Analyzing *inter-industry* Success factors, as reported by Digman L.A. (1990), and Butler T. & Fitzgerald B. (1999), is always a complex matter, particularly if such industries are quite far from one another. Guynes, C. & Vanecek, M.T. (1996), then, identified *critical factors for success* as those business areas where “things must go right” to guarantee successful competitive performance for an organization.

Similarly, Oakland J.S. (1995), associates these factors to what organizations must accomplish to achieve their missions. Kanji G.K. & Tambi A.M. (1999), instead, underlined how, for such factors to be more effective, they have to be reflected in managerial areas, in which continual attention is needed in order to achieve high performances.

Through the study of three successful companies across different industries conducted in the previous chapter (*See Sections 4.1, 4.2 and 4.3*), some major drivers for success have been identified following the previous definitions and will be hereafter discussed.

In particular, those aspects which have been highlighted as key success factors for the companies in analysis can be comprehended into two broad categories: business model and marketing/branding.

By analyzing Spotify, Booking.com and Kickstarter, it appeared clear the critical role of the two major key success factors (business model and branding) in fostering these companies' development.

(i) Business Model success.

The first aspect in analysis refers to their exceptional business models, which allowed them to reap huge benefits from their industry while ensuring scalability.

The relevance of building a sustainable and scalable BM has already been underlined in previous chapters (*See Section 3.2.1*); however, some further considerations can be made starting from the analysis of these companies.

Indeed, it appears crucial for companies to adopt a business model which is both hardly-replicable by competitors as well as designed in a way which allows for some degree of flexibility.

The concurrence of these two aspects seems to have a very meaningful correlation with a startup's success; being able to clearly highlight where the business is located in the value chain and what consumers will get out of it appears tremendously crucial in today's business environment. Organizations which understand this simple fact, have a clearer idea about how to conduct their business in a way which enables them to generate revenue and make a profit.

Flexibility is also crucial. Many businesses have the erroneous belief that once they have established their business model they should just stick to it. Nevertheless, successful businesses are those willing to innovate and, when necessary, move to a new business model. This ability to change represents what has been called by Teece D. J. (2009) *dynamic capabilities*; business models, indeed, should be constantly evolving in response to new business opportunities, market trends, technology and competitors.

(ii) *Branding success.*

The second aspect to analyze as a driver to success for these startups is their marketing and branding strategy.

First of all, in today's world of marketing, the term *branding* identifies the way a customer perceives a company. This broad definition comprehends quite a number of aspects which, in a nutshell, may be identified as "customer experience".

What became important in modern branding is being aware of its evolving nature; correct branding is a moving target that changes with the perception customers have about a company and becomes particularly critical in saturated markets.

Branding tells customers what makes a company different from its competitors, thus building a clear idea in their mind about if and why they should focus that company instead of others.

For the successful companies studied, thus, branding has been a key success factor as it promoted recognition of these companies from their competitors.

The core aspect about their branding strategies, regardless of the industry, was giving customers a tangible reason to choose them over competition; they achieved this very important stage of their development by understanding and – then – solving a particular problem which customers were sensitive about.

To wrap it up, the success drivers which arose from the analysis of three industry-leading startups can be trimmed down to two: *business model* and *branding*.

Needless to say, these two aspects alone are to be comprehended in a wider market proposition to actually have such a positive impact. However, startups – and newborn companies in general – should be well-aware about the importance of these aspects and dedicate them the resources they deserve.

4.4.2 CROSS-INDUSTRY FAILURE ANALYSIS

On the other side of the coin, an inter-industry analysis over unsuccessful businesses was also conducted.

In recent years, a huge amount of material about the reasons why startups fail has been created (Lassenius C. & Smolander K. (2014), Feinleib D. (2012)) and, sometimes, authors' opinions over other authors' work may result a bit confusing.

Nevertheless, some aspects which are deemed as fostering startups' failure are quite agreed upon by the majority of the business community.

Interestingly enough, among these aspects can also be found the reasons which arose from this study which, thus, can be assumed as quite correct.

(i) Business Model failure.

The first reason cause of failure for the companies analyzed (Rdio, Venere and Quirky) has been identified as the *business model*.

As previously discussed (See Section 4.4.1), a fine-tuned business model is an incredibly important aspect for the success of a company, and the contrary is also true.

Organizations which devote too little resources into thinking and developing a viable and flexible business model have a huge chance of seeing their business collapse from within.

A huge mistake companies often make is assuming that, because they built an exciting web site, product, or service, customers will naturally come. As a matter of fact, attracting costumers – especially

if dealing with concentrated markets – quickly becomes a quite expensive task, and in many cases the *cost of acquiring the customer* (CAC) is actually higher than the *lifetime value of that customer* (LTV). Indeed, one easy countermeasure to business model issues would be for startups to understand the basic relationship between CAC and LTV. The rule is extremely simple:

CAC must be less than LTV

CAC = Cost of Acquiring a Customer

LTV = Lifetime Value of a Customer

Another pretty basic rule which may help startups overcome issues with their business models is the “*Capital Efficiency Rule*”.

For a business to be *capital-efficient*, it is crucial to recover its cost of acquiring customers in under 12 months. Companies like wireless-carriers and banks may break this rule, but they have the luxury of access to very cheap capital. In a nutshell, the “rule” is:

Recover *CAC* in less than 12 months

Albeit these two “rules” are to be considered more as suggestions than actual rules, they may be crucial for quite a lot of companies.

(ii) *Branding failure.*

Once again, there're a lot of factors which may result in a startup's failure: market problems, poor management, cash shortages and product issues can all be brutal. However, the second, quite critical, aspect which emerged as "startups killer" from the companies analyzed is *branding*.

In the same way business models can be huge success or failure drivers, good or bad branding strategies have the same effect.

In the previous section (*See Section 4.4.1*) has been underlined the incidence of a well-rounded branding strategy for a startup's success; a very similar correlation can be found between startup's failure and bad branding.

Being branding an extremely wide activity, comprehensive of a huge number of sub-tasks, the major aspects which may affect it – positively or negatively – are tricky to identify.

"Most entrepreneurs have great ideas for products and services, but don't know how to market them," (Donnelly J. H. et. Al. (2013)). One of the biggest mistakes startup entrepreneurs often do, is creating a proven and repeatable system of marketing for their organization.

In particular, there are four major marketing-related problems which are responsible for the failure of a number of startups:

- *Market-fit.*

The first, huge, fault companies make in marketing is that they fail to gain precious feedbacks.

Developing a product/service that the market doesn't require it's one of the leading reasons why so few businesses actually achieve acceptable growths.

- *Conversion.*

Most startup websites are not built to sell. However, in the digital era, websites have to be at the core of any marketing strategy. When a potential customer gets to know about a company, he should be "gently forced" to follow a path that leads to where the company can convert him from "anonymous visitor" to "known prospect," with whom a meaningful connection can be started. That means turning a website from a showcase to a profit-machine.

- *Being unfindable.*

Through Search Engines such as Google, Yahoo and Bing, potential buyers can easily find-out everything they

want to know about a company. Therefore, when they're looking for a product, companies have to make sure they're "easy to find".

That being said, the range and scope of social media – and inbound marketing tools in general – is amazing and tends to overwhelm even the most navigated marketer, let alone the average entrepreneur. The best advice is to focus on a few inbound tactics that really pay back, while setting aside the other thousands of "unproven" tactics.

- *Measuring results.*

The fastest path to growth has always been to double-down on what worked. There are many marketing metrics to monitor, but figuring out the ones that most efficiently work and building the business around them is a crucial first step.

What should result from these paragraphs, is that marketing has a tremendous power in business. Being able to understand what is good and what may be bad marketing is at the core of a company's ultimate success or failure.

4.4.3 CROSS-INDUSTRY “WIP” ANALYSIS

Other than a successful and an unsuccessful company, some study was also conducted over a “work-in-progress” (WIP) company for each of the industries in the previous analysis.

These “WIP” companies are organizations which do not have a clear direction yet, or that are still struggling to see a remarkable growth or market penetration.

Hence, this further study had the aim of identifying meaningful drivers to a company’s possible success or failure.

Among the startups Tidal, Ijendu and Indiegogo, a number of relevant features have been analyzed and, pulling from these findings, some interesting assumptions can be made.

Basically, WIP companies have an aspect which can easily evolve in their biggest competitive advantage as well as in their gibbet: uncertainty.

Indeed, what emerged as one of the biggest question marks for in-development startups is the definition of their true identity, which will have a huge impact on the way these organizations are going to allocate and exploit their resources.

On one hand, being a work-in-progress organization may help by confusing competitors, which may easily have no clue on how to prevent such a company to become a serious threat.

On top of that, while being off-the-radar, WIP companies may earn enough time to study the market and learn from other companies' mistakes to improve their product, better-understand customers' needs and develop an excellent marketing strategy.

Indeed, when dealing with innovation, being a *latecomer* has some serious advantages, as pointed out by (Mathews J. A. (2002); however, such benefits always come at a price.

Being able to understand if such price is worth paying should be at the core of WIP companies concerns.

On the other hand, thus, latecomers may find themselves stuck in a situation where they struggle to define their unique value proposition. This situation, which is more common than one may think, has a tremendous impact on the company's probabilities of success.

Among the numerous obstacles which may arise from such a situation, the decreasing appeal towards investors and the possibilities for other companies to reach their *critical mass* are, by far, the two most dangerous which may arise.

As Li J. & Kozhikode R. K. (2008) underlined, the real challenge for latecomer firms is all about timing; being a latecomers *per-se* is never an issue – and may create some interesting opportunities as well –, but understanding and studying the critical deadlines which may arise from it has to be extensively understood by startups.

4.4.4 PARAMETERS GENARALIZATION

In the following paragraph, three meaningful microeconomic indicators have been studied and, then, formalized as variables for the final model.

Such indicators have been identified through a detailed study of a reference group composed by 9 startups, successful, unsuccessful or “Work-In-Progress” (WIP), operating across 8 major sectors (for references over the definition of startup adopted in this thesis, *See Section 3.1.5*):

- Business Products & Services;
- Consumer Products & Services;
- Energy;
- Financial;
- Healthcare;
- Industrial;
- Technology;
- Transportation;

The basic idea behind this process was the concept of generalization. In brief, through the study of the reference group, we identified three indicators which resulted meaningful for startups:

- *Digital Marketing Efficiency,*
- *Business Model's Strategic Integrity,*
- *Accountability.*

Then, these indicators were broken-down into their composing units which were also analyzed.

Finally, the three microeconomic indicators were calculated for a database composed by 135 startups.

This 135-startup-sample and its relative data have been collected in two ways: data and figures about web analytics and other “online metrics” have been collected through the datamining software SimilarWeb.com; those referring to economical aspect of these companies have been gathered through the online databases CrunchBase and AngelList.

(i) Digital Marketing Efficiency.

The first variable in analysis refers to a measure of the marketing efficiency. As previously underlined (See Sections 4.4.1, 4.4.2 and

4.4.3), one of the most significant drivers for a startup's success is branding, or, in a wider perspective, marketing activities in general.

Measuring the degree of efficiency of such activities, however, can be pretty challenging, in particular if the aim is to define a very specific threshold value between efficiency and sub-efficiency. Most studies on this topic – such as Smith W. R. (1956) – focus on specific aspects such as "Marketing costs" or "Marketing ROI", yet these appear to be quite incomplete indicators for serving the purpose of this paper.

Therefore, in the following lines will be proposed an alternative measurement for the definition of marketing efficiency.

Since the objective of this study is analyzing startups companies, we chose to concentrate on an indicator which moves away from "classical" theories in favor of more recent interpretations. In particular, we tailored such indicator in order to best fit the study conducted in this paper.

Thus, as we're focusing on startup companies and we do not have access to every single data regarding these companies, we built the indicator in a way that resulted both straightforward and effective.

In the Digital Era, good insights about a company's marketing results can be deduced by scraping online data. Specifically, by using a software called SimilarWeb.com, we were able to obtain extremely useful data regarding some major digital marketing metrics for the entire database we have been working on.

With regard to digital marketing, whether the organization under analysis is a startup or not, and regardless of the industry it operates in, its website's *traffic*¹⁹ and its relative *conversion rate*²⁰ are those metrics which arise more interest.

To define marketing efficiency, thus, we focused primarily on digital-marketing-related activities as they resulted both more suitable to our study as well as less complex to measure. The rationale behind this choice was to understand how, regardless of the marketing strategy an organization pursues, the return from marketing activities can be greater than or equal to the cost of such activities.

In order to conduct this kind of study, two major assumptions have been defined:

1. Marketing is profit-driven.

For this analysis, we are going to consider marketing activities as measurable in terms of Costs and Profits, we'll neglect other metrics such as *brand exposure* or *customer satisfaction*.

¹⁹ Web-traffic refers to the amount of data sent and received by visitors to a web site. This is determined by the number of visitors and the number of pages they visit).

²⁰ Conversion refers to the act of converting site visitors into paying customers).

2. Marketing is only digital.

The justification of this assumption is that digital-marketing-related activities are extremely less complex to analyze than more “traditional” ones. In particular, we’re assuming that the only way of marketing a product/service – for a startup – is to do so through the internet.

The concept behind digital marketing is pretty straightforward: the more traffic a company generates to its website and the highest the conversion rate, the more it will sell.

To formalize this statement, however, other variables must be taken into account. In a first approximation, we could define the objective digital-marketing-activities should be pursuing as: making sure that the revenue from a “converted” client is always greater than or equal to the cost of acquiring that client.

Hence, the variables which have been used to calculate this index are:

- (i) The marketing investment “ I ”, which measures the resources (in monetary terms) which have been devoted to a specific digital marketing project.
- (ii) The traffic “ t ”, which represents the change in traffic volume (measured as number of visitors) directly attributable to a specific marketing action.

- (iii) The conversion rate “ γ ”, describing the number of costumer which are “converted” from visitors to paying-costumers (expressed as a percentage of “ t ”)
- (iv) The average purchase “ \bar{P} ”, which is a measure of the average amount spent for the product/service by “converted” visitors.

The resulting formula is the following:

$$\frac{I}{t} \leq \frac{(\gamma \cdot t) \cdot \bar{P}}{t}$$

which becomes:

$$\frac{I}{t} \leq \gamma \cdot \bar{P}$$

Practically speaking, this formula states that the average cost of acquiring one visitor must be less than or equal to the average revenue generated by a “converted” visitor.

From this, we can define what we will call the *Digital Marketing Efficiency index* (DME) “ ε ” as:

$$\varepsilon = \frac{\gamma \cdot \bar{P}}{I/t}$$

The previous formula, along with other metrics, has been used in the next chapter (*See Sections 5.1 and 5.3*) for the construction of the final model.

(ii) Business Model's Strategic Integrity.

The second parameter in analysis refers to a measure for Business Models' efficiency. However, since measuring such a variable can result a particularly complex task, we're going to analyze the strategic integrity linked to business models (in quantitative terms) as a direct implication of the BM's efficiency (expressed in qualitative terms).

Making the right choices in building a sturdy but flexible business model, as previously underlined (*See Sections 4.4.1, 4.4.2 and 4.4.3*), represents yet another extremely significant phase in improving a startup's success chances.

Quite differently from marketing, however, the concept of business models has not a commonly-shared vision and its borders are blurring lines with a lot of clarifications which still has to be made by the academic community.

Nevertheless, the importance of BMs is almost unanimously recognized and they must be taken into account when describing a company.

In previous chapters (*See Sections 3.2.1, 4.4.1 and 4.4.2*) some characteristics about “successful” business models have been underlined; in particular, starting from what emerged from previous sections, we are going to identify 5 features which – if all present – will describe extremely cohesive business models.

We will be considering these 5 aspects as the predominant ones for BMs’ completeness, meaning that their simultaneous presence within a BM, will make it almost as efficient as practically possible.

- *Scalability*

One of the most widely recognized prerogatives for a BM to be efficient is represented by *scalability*.

Scalability, in brief, “represents a characteristic of a system, model or function that describes its capability to cope and perform under an increased or expanding workload”.

Basically, a scalable model will be able to maintain its efficiency when challenged by larger operational demands.

As scalability represents a necessary condition for BMs to be efficient, this will be represented by its specific weight in the following qualitative analysis.

- *Repeatability*

The second prerogative for BMs efficiency, which is usually described in a sort of blend with scalability, is *repeatability*.

Repeatability refers to the capability of maintaining a return while repeating operations (such as marketing, sales, etc.).

In a nutshell, a business model is repeatable when it allows the recurrence of some core tasks for an indefinite number of times and it will still yield returns.

The association between scalable and repeatable is, thus, pretty straightforward: it is physically impossible to generate a scalable BM which is not repeatable; the same, however, is not true for other combinations of these two aspects (repeatable and non-scalable, non-scalable and non-repeatable).

Adopting the same rationale used for scalability, repeatability will be represented as the second necessary condition for BMs' efficiency in the following qualitative analysis.

- *Robustness*

A third concept which increases BMs' efficiency is their *robustness*.

This is a concept which has been borrowed from mathematical modelling, where it identifies systems or model which has the ability to perform effectively while its variables or assumptions are altered; thus, a robust model is capable to operate without failures under a variety of circumstances.

Applying this concept to BMs, it refers to a BM's ability to yield returns while one or more variables (concerning the market, the product/service, the operations, etc.) are altered.

- *Flexibility*

Another characteristic which is relevant for BM's efficiency is its *flexibility*.

This is a concept which has been extremely popular in economic science for the last 30 years, in particular in terms of diversification.

With flexibility in relation to business models, however, we are going to refer to a characteristic which resembles a concept that, in organizational theory, has been called by Teece D. et. Al. (1997) *dynamic capabilities*.

The concept of flexibility also relates to what was previously called *repeatability*. In particular, we are going to define a business model as flexible when it entails a concept of persistent reiteration – here is the connection with the concept of *repeatability* – of creative processes which have the aim to continuously improve it.

- *Uniqueness*

The last concept which will concur in next chapter's qualitative analysis refers to yet another mainstream concept in economic studies: *uniqueness*.

This attribute describes the ability of a model, system or function to be particularly hard to replicate from other companies and/or competitors.

Building a *unique* business model, thus, means having an almost-inimitable way of creating and delivering value to customers. This characteristic has very little to do with the actual product/service provided by a company; it is a matter of "how" rather than of "what".

The five features just described have been used to pull together a qualitative model describing the Business Model's Strategic Integrity (BMSI), for startups, in quantitative terms.

Nevertheless, it appears worth underlining how the following represents just a possible example of how such a model could be developed, and builds on the assumption that further work still needs to be done on this topic.

The model developed is rather linear: a *weight* " w_i " have been assigned to the five characteristics previously enucleated (scalability " w_1 ", repeatability " w_2 ", robustness " w_3 ", flexibility " w_4 " and uniqueness " w_5 ").

To establish these weights the following criteria have been adopted:

- Each of five weights " w_i " must be comprehended between 0 and 1 ($0 < w_i \leq 1$);
- The sum of the weights assigned to scalability and repeatability (" w_1 " and " w_2 ") must be greater than or equal to 0,5 ($w_1 + w_2 \geq 0,5$);
- The sum of all weights assigned (" w_1 ", " w_2 ", " w_3 ", " w_4 " and " w_5 ") must be equal to 1 ($\sum_{i=1}^5 (w_i) = 1$);
- The weights assigned to robustness and flexibility (" w_3 ", " w_4 ") must be equal one another ($w_3 = w_4$) and greater than the weight assigned to uniqueness (" w_5 ");

Given the previous conditions (which have been deducted from the previous description of the five characteristics), the weights have been assigned as follows:

- Scalability: 0,25;
- Repeatability: 0,25;
- Robustness: 0,2;
- Flexibility: 0,2;
- Uniqueness: 0,1;

Then, a value on a 1-10 scale was subjectively assigned to all startups of the database (*See Section 5.2*) for each specific weight, where 1 means “not-implemented” and 10 means “completely implemented”. These values represent the degree of implementation of the variable “ w_i ” for the startup in analysis.

Furthermore, the degree of implementation for each of the five variables “ w_i ” was calculated as a proportion to the value 1-10 assigned to that specific variable for each startup.

As an example, a startup with a value 8/10 assigned to scalability “ w_1 ” ($w_1 = 25\%$) will have a final value of $8/10 \cdot 25\% = 0,2$, which is a final “ w_1 ” value of 20%.

Finally, the cumulative sum of all the “ w_i ” relative to each startup has been calculated (for the complete results See Section 5.1); the next formula shows the calculation of the BMSI index for each startup (s):

$$BMSI_s = \sum_{i=1}^5 (w_i)$$

While the following figure displays a qualitative diagram representing the degree of Business Model's Strategic Integrity as a measure of the Business Model's efficiency.

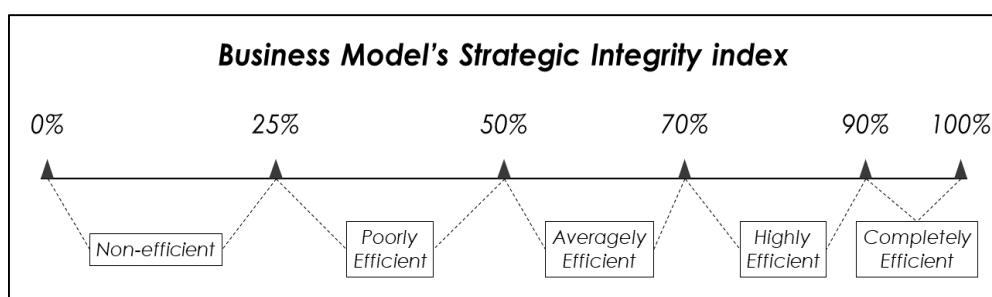


Figure 36 – BMSI index and Business Model's efficiency; Personal Processing

In brief, this diagram represents the efficiency scale relative to the indicator named “Business Model's Strategic Integrity” (BMSI).

Hence, a startup will get – according the previously explained calculations – a BMSI index which lies somewhere between 0% and 100%; its business model will be, thus, considered as either non-efficient, poorly efficient, averagely efficient, highly efficient or completely efficient.

The concept of *dynamicity* previously underlined (*See Section 3.4*) is recurrent once again. In particular, it is highly probable for startups to change and tweak their BMs during their lifecycles, thus moving along the diagram.

The BMSI index will be used further in this paper to construct the final model (*See Section 5.1*).

(iii) Accountability Index.

The third, and last, parameter we'll be studying, for what concerns the Microeconomic analysis, defines a measure for the accountability of a startup. When trying to understand a specific company, analysts study dozens of variables with the aim to predict as precisely as possible the future of that organization.

However, about startups, the variables to consider may not be exactly the same as other “traditional” companies.

In the following chapter, for instance, will be conducted a brief examination over some of the most meaningful financial indicators when analyzing a startup.

In particular, seven financial indicators were taken into consideration, four of which were further analyzed while the other three have been discarded:

- *Revenue Growth:*

The Revenue Growth is the first indicator which have been accepted as variable for the construction of the *Accountability index*.

It is a measure of how quickly a startup can grow maintaining its way of doing business (a.k.a. without changing its Business Model). It is calculated as the difference between revenues in two successive periods (period-0 and period-1), expressed as a percentage of the revenues of period-0.

It shows whether the market is experiencing steady growth or not, and whether the company should be selling one product or a collection of complementary ones. In brief, revenue growth projections express the potential of the business.

For the sample we'll be considering in the following chapter, Revenue Growth resulted almost normally

distributed between 40% and 140%, with its average being 78%.

- *Net Income (or Burn Rate):*

The Net Income (called *Burn Rate* when negative), is composed by the revenues minus all the costs. This indicator shows the minimum funding amount a startup needs to raise in order to become profitable.

This measure, however, results somewhat vague.

In particular, it is extremely sensitive to changes of in the market conditions and it also appears quite complex to compare across different industries and sectors.

Hence, since the database of startups we'll be studying in the next chapter will be distributed across different industries, we are going to reject this indicator for the analysis.

- *Gross Margin:*

Gross Margin is the second variable which has been included in the formula of the *Accountability index*.

It basically measures how expensive it is to produce the output; it is “the glass ceiling” of profitability, as the net margin can never exceed the gross margin.

It's calculated by subtracting all the COGS (costs of goods sold) from the revenues.

This indicator is expressed as a percentage of the revenues; in our sample, it resulted comprehended between 14% and 88%, with an average value of 51%.

It is a measure which varies across industries; however Gross Margins higher than 90% are to be considered outliers as they are particularly sporadic.

- *Contribution Margin:*

The (unitary) Contribution Margin is regarded by business and financial analysts as one of the most significant indicators for accurate financial forecast.

Hence, it has been considered for the calculation of the *Accountability index*.

It measures the profit per unit, without considering fixed costs.

Is calculated by subtracting the variable costs to sell one selling-unit from the total revenue generated by selling that particular unit.

In general, the greater the contribution margin, the more profitable the business is (on a unitary basis). The sample analyzed shows Contribution Margins ranging from 5% to 28% (with an average of 15%), independently from the sector.

Obviously, contribution margin has to be put into context. In particular, fixed costs should always be taken into the equation for a proper analysis.

- *Costumer Acquisition:*

The Customer Acquisition Payback Period (a.k.a. Sales Efficiency) measures how aggressive a company can be marketing and selling its services. Basically, the longer the payback period, the greater the risk that a customer churns, resulting in a loss.

Very efficient businesses usually recover their customer acquisition cost in 6-to-8 months; a wider 12 months recovery window is, however, more common.

Since this variable is strictly correlated with the industry, and it may also vary depending on the geographic region costumers belong to, it has been discarded from our analysis.

- *Churn Rate:*

The last indicator used for the calculation of the *Accountability index*, extremely meaningful for startups, is the Churn Rate.

This indicator calculates the revenue potential of each customer. It underlines how many customers step back from purchasing the product/service in a given timeframe (typically a year).

High churn rates predict slower revenue growth over time. In our sample, this indicator was distributed between 1,5% and 65,5%, with an average of 24,3% (which is almost 5 points higher than the 19,6% reported by many startups).

- *Revenue per Employee:*

The last indicator analyzed, which has been discarded from this particular study, is the Revenue per Employee. It measures how efficient a business is in using technology to market its products.

Since some sectors and products intrinsically need more people than others to be sold, the indicator has been rejected for this study.

To calculate these financial indicators, data have been gathered online through a number of different sources, among which the most important have been: TechCrunch.com, AngelList.com, CrunchBase.com and the U.S. Bureau of Statistics.

Once all four the microeconomic indicators (*Revenue Growth*, *Gross Margin*, *Unitary Contribution Margin* and *Churn Rate*) were calculated, and since they all were expressed as percentage values, we calculated the weighted value of those indicators (given the same weight to the four of them).

What resulted were measurements comprehended between 19,93% and 70,19%.

In order to rescale such values in a meaningful way, we adopted a Multiple Criteria Decision Analysis (MCDA) methodology, as already done previously in this paper (*See Section 2.5*).

The result was a set of values ranked with scores ranging from 0 to 100.

4.5 CONCLUSION

To conclude this chapter, a last point needs some further explanation.

It is worth noting that both the results obtained and the methodologies adopted throughout this chapter, used extrapolate some meaningful micro-economical indicators, are highly dependent on the study of nine startups (*See Sections 4.1, 4.2 and 4.3*).

In particular, in this section has been underlined the crucial impact which business models and branding strategies have on securing a solid position in the market.

As a direct consequence of that, the study was directed towards a deepening of these topics by analyzing the most used financial indicators which relate to BMs and marketing activities.

What resulted were three main parameters (*Digital Marketing Efficiency index, Business Model's Strategic Integrity index and Accountability index*) which will be used, together with what emerged from the Macroeconomic study (*See Section 2*), for the model developed in the next chapter.

To conclude, the core concept of this section has been revolving around the deduction of significant parameters through an empirical analysis.

In particular, by studying the aforementioned companies, we were able to first deduce and then measure the major micro-economical indicators which actually had (or are having) a tangible impact on such organizations.

5. MODEL DEFINITION

In this chapter is proposed a conclusive framework which will help to measure the probability of success of a startup in a specific environment.

The model has been developed by integrating the results emerged from the three main chapters of this paper: Section 2 (Macroeconomic Analysis), Section 3 (Theoretical Framework) and section 4 (Microeconomic Analysis).

5.1 MODEL DEFINITION

The main concept upon which the final model was constructed has been, once again, *generalization*.

Since the aim of this paper was to develop a framework which could be used to define the probabilities of success of a startup in a given environment, the basic notion that every company is, indeed, completely different from another resulted a major issue to overcome. In particular, the model's variables we have been seeking, needed to have, simultaneously, all the following attributes:

Objectivity

Since objectivity of measurements and definitions has been an important prerogative throughout this entire paper, it was essential to maintain it for the final model.

In particular, the variables of the model need to be objectively-measurable by – ideally – everyone.

For as simple as this attribute may seem from a theoretical point of view, it appears extremely challenging to achieve in practice.

Accuracy

The variables of them model should also be “accurate” indicators, meaning that they should be both *easily interpretable* and *clearly descriptive* of the attribute they’ll be relating to.

For instance, saying that the accountability index for a company is 2,218 is way more complex to interpret than saying that the same index has a value of 78%.

On top of that, expressing these variables on a fixed scale allows easier and quicker comparisons between different indicators.

Adoptability

The third attribute the model's variables should have, refers to them being "adoptable".

In particular, since the idea of this study is developing a model which will be widely adjustable and capable of measuring the majority of startups through the same metrics, the variables of the model should be both easily accessible and commonly present in the majority of startups.

Clarified the relevance of the previous attributes, the model can start to be assembled. Above all, the main idea was to develop this framework by merging together what arose in the three main phases of this thesis.

In particular, the model has been constructed as follows:

(i) Status Definition:

The first step involved in the model is defining if the company in analysis is, indeed, a startup.

Since the model is specifically tailored for studying startups – even though it could be tweaked in order to meet the requirements for analyzing a wider range of companies – it appears essential to evaluate the status of the company under scrutiny in the first place.

The procedure to do so is rather straightforward: if the firm satisfies the following definition of startup, it can be evaluated through the model, otherwise it shouldn't:

*A flexible and evolving business entity,
with a strong vision, a commonly-shared objective
and a non-hierarchical structure
which operates with a unique,
scalable and repeatable business model,
develops at remarkably high growth-rates
and is designed with a global perspective.²¹*

The definition, as explained in *Section 3*, has been precisely tailored in order to be more specific than other mainstream definitions of startups; due to its nature, thus, it appears harder for companies to fully satisfy the definition.

(ii) Macroeconomic identification:

After companies are filtered through the definition of startup, they can be associated with their specific macroeconomic variable.

²¹ More information over the definition can be found in *Section 3.1.5*.

This step is extremely meaningful, as it basically assigns a “score” to each company independently from the company itself but based, instead, on macro-economical parameters.

In particular, each startup is given a score which is dependent from the Country in which it operates (if the company is not hosted in a specific Country we are going to assign the score of the Country in which it operates the most).

This value has been calculated with a Multiple Criteria Decision Analysis (MCDA) methodology and the results are shown in the ranking which has been built in *Section 2.6*. The variable can be, thus, broken down in the following attributes:

- (i) *Startup-Friendly Policies*;
- (ii) *Labor Availability*;
- (iii) *Services Availability*;
- (iv) *Startup Districts Presence*;
- (v) *Foreign Direct Investment (FDI)*.

These variables concur in expressing what has been called the *Macro-Economic Ranking* value, which will, hence, be considered as the first parameter in the conclusive model.

This first variable, therefore, will be a number comprehended between 0 and 100 (with 0 expressing lowest Country-specific possible score and 100 expressing the maximum). A second characteristic which is peculiar of this parameter is that it can be *redundant*, meaning that startups belonging to the same Country, regardless of other features, will present identical scores for what concerns the Macro-Economic Ranking value.

Finally, the variable is also *independent* from the others, meaning that it has no direct correlation with other metrics present in the model.

(iii) Microeconomic examination:

The third phase of the model consists in defining the Micro-economical variables related to the company in analysis.

Since this phase of the model is the one which actually presents variables that are completely different from one company to another, it is also the most complex one in terms of measurements.

The variables which will be used are the ones already described in *Section 4.4.4*, and, when broken down, they are calculated as an aggregate value of other variables.

These variables are three:

1. *Digital Marketing Efficiency (DME) index*

which is calculated using 4 other variables, namely:
Conversion rate, Average purchase, Digital Marketing
investment and Online traffic.

The following formula²² has been used to calculate the
DME index:

$$\varepsilon = \frac{\gamma \cdot \bar{P}}{I/t}$$

As discussed in *Section 4.4.4*, the data required for the implementation of this formula can be “mined” through the use of professional data-scraping software such as SimilarWeb.com, ScrapeBox or SEO PowerSuite.

2. *Business Model's Strategic Integrity index*

calculated as a measurement for the Business Model's efficiency, the Business Model's Strategic Integrity (BMSI) index is a variable whose values range from 0% to 100%.

²² For more information about this formula See *Section 4.4.4*.

This variable is calculated, as explained in *Section 4.4.4*, by objectively assigning to 5 indicators (*scalability, repeatability, robustness, flexibility* and *uniqueness*) values on a 0-to-10 scale, which are then multiplied for a constant “weight” previously assigned to each indicator; ultimately, the cumulative sum of these indicators is calculated.

It is important to note that this particular variable is the one which depends the most on the analyst’s subjective decisions.

For instance, values resulting from these calculations should follow the same process described in *Section 4.4.4*; however, variations of the “weights” may be applied for the analysis of particularly nonstandard startups.

3. *Accountability index;*

The third Micro-economical variable of the model is what has been called in *Section 4.4.4* Accountability index.

This indicator represents a measure of the financials and cash-flows of a company, and is composed by merging four other measures:

- a. Revenue Growth;*
- b. Gross Margin;*
- c. Contribution Margin;*
- d. Churn Rate;*

As previously discussed, these measures have been selected as they do not simply provide a static “picture” of the financial situation of a firm, but they describe the ability of the organization to cope with complexity and “make ends meet”.

Nevertheless, such indicators are very specific measurements and they leave nothing to subjective interpretations when it comes to results.

The basic technique which has been applied in order to harmonize the different variables comprehended in the model is based, as already discussed, on the Multiple Criteria Decision Analysis (MCDA) methodology.

Among the numerous alternative techniques we could have chosen, this methodology appeared to be the best fit with the way we've been conducting our analysis.

In particular, the peculiarity of this method is that it allows to build models composed by variables which would be quite complex to combine otherwise. This means that, through the application of the MCDA methodology, we've been able to construct the model as a convergence of theoretical, qualitative and quantitative variables.

The methodology, as discussed in *Section 2.5*, involves two major steps:

- (i) Linear interpolation;

The linear interpolation refers to a technique which is used for “rescaling” a set of measurements on a predetermined interval.

In brief, it means that once the values of a variable have been calculated for the entire sample of companies in analysis, they'll be rescaled on a 0-100 scale, where “0” identifies the “worst” value and 100 the “best” one.

This technique, although may not be extremely precise in term of the final values *per-se*, it represents a quite effective way of comparing variables which have completely different unit scales. This means that we will be able to compare and aggregate values which represent completely independent

variables within the same model in an effective and meaningful way.

(ii) Weight allocation;

The second core step in the MCDA methodology is the “weight allocation” process.

What this means, in brief, is that once the values of each variable “ x_i ” have been “rescaled” for the entire sample, a specific weight “ w_i ” will be assigned to each variable “ i ”. Then, the ranking-value “ α ” of every startup under scrutiny can be calculated as:

$$\alpha = \sum_{i=1}^n (x_i * w_i)$$

Once the ranking for the startups under analysis has been calculated through the previous formula, the next – and last – step involves calculating its probability of success.

With reference to this particular paper, we decided to agglomerate the four Micro-economic variables (*See Section 4.4.4*) into

a single “Micro-ranking” in a way that resembles the procedure carried on for the “Macro-ranking” in *Section 2.6*.

As a consequence of this, the model results composed by two major variables, which can be broken down into multiple indicators. Furthermore, the methodology adopted borrowed some features from a mathematical technique called *Analytic Hierarchy Process* (AHP) developed in the late ‘80s by Saaty T. L. (1998) and later adapted to business theory by the Iraqi mathematician in the ‘90s (Saaty T. L. (1990)).

In brief, the AHP methodology involves building a “hierarchy tree” which follows a top-down approach.

Meaning that once the final variable to calculate has been defined – in this paper, “the probability of success of a startup” –, it is broken-down into other sub-indicators (in our study “Macro-ranking” and “Micro-ranking”), which will be further broken-down until a meaningful set of variables is identified. At this point, it is possible to calculate the “top” variable by re-agglomerating the “bottom” ones for each level.

However, for the purpose of this paper, we’ll not integrate a full AHP methodology in this study. Nevertheless, we followed the idea of a hierarchical structure concerning decision-making processes involving multiple criteria – which is the basis of the AHP methodology.

To exemplify this procedure, the hierarchy tree for this paper is presented in the next figure (*See Figure 37*):

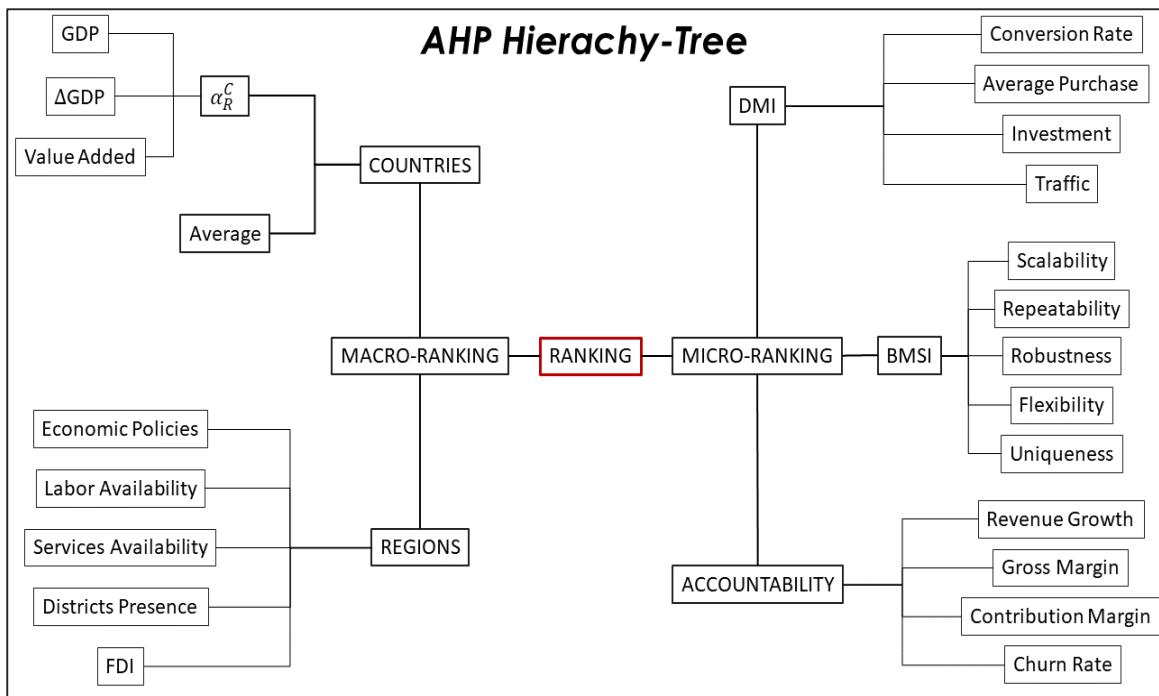


Figure 37 – AHP Hierarchy-Tree; Personal Processing

The previous diagram represents the 21 variables (on the two far sides of the figure) which will have to be defined in order to calculate the final “Ranking” value for a startup according to our model.

Needless to say, the 21 variables defined above are composed by other variables themselves; however, for a number of practical constraints, this diagram is only representing variables up to the 2nd level of depth in the hierarchy tree.

To conclude, the final part of the model developed in this paper involves a general statistical analysis between Macro-ranking and Micro-ranking. Such study has been segmented into three phases:

(i) General Study;

Where the entire sample is analyzed and overall data (sample mean, variance, correlation) between the Macro-ranking and the Micro-ranking are calculated.

(ii) Group Comparison;

Where startups are divided into groups which are then statistically analyzed in comparison to one-another. This phase is discretionary to the analyst and the groups may vary according to the typology of information that is required.

For instance, in this paper groups are defined as geographic areas, but they could be defined in terms of “sector of operation” or other parameters.

(iii) Ranking Classification;

The last phase, where a number of ranking “classes” (in this study there will be four) are defined, and startups

are allocated within these classes according to their final score.

Ultimately, after the analysis of the ranking, is calculated the probability of success for each startup starting from data extrapolated from the ranking itself.

5.2 DATABASE

For the empirical application of the model and the study of the microeconomic variables (*See Section 4.4.4*), a database comprehensive of 135 startups has been analyzed.

The companies within the database resulted from a random sampling from a number of different source.

In particular, data regarding over 200.000 companies were pulled together from two main sources: AngelList.com and CrunchBase.com.

However, since studying this entire population of firms would have taken at least a couple of years, we limited our sample to a number (135) comprehended between 100 and 200 companies, which has been randomly selected.

The procedure adopted to select these companies is statistically equivalent to the following procedure:

- i. Downloading the databases from the two selected sources (AngelList.com and CrunchBase.com);
- ii. Random shuffling of the database;
- iii. Selecting the first “ x ” companies (for this study “ x ” was 135) which meet the definition of startup (*See Section 3.1.5*).

The resulting companies, thus, are to be considered as a 135-startup sample randomly selected from a 200.000+ database which meet the definition of startups previously provided in this paper.

Finally, for each of these companies were calculated those indicators necessary for the application of the model described in the previous section.

What follows is the database complete with the raw data (on a 0-100 scale) regarding the macroeconomic and microeconomic variables as well as the final ranking value in alphabetic order.

| | <i>Name</i> | <i>Country</i> | <i>Macro-ranking</i> | <i>Micro-ranking</i> | <i>RANKING</i> |
|---|---------------|----------------|----------------------|----------------------|----------------|
| 1 | 3D Hubs | Netherlands | 58,24 | 50,40 | 54,32 |
| 2 | Adioso | USA | 100,00 | 56,95 | 78,47 |
| 3 | Ambassador | USA | 100,00 | 35,06 | 67,53 |
| 4 | Antlos | Italy | 41,07 | 20,84 | 30,95 |
| 5 | Appsfire | France | 43,69 | 57,24 | 50,46 |
| 6 | B5M | China | 63,24 | 55,15 | 59,20 |
| 7 | Babelverse | UK | 58,56 | 52,34 | 55,45 |
| 8 | Baby.com.br | Brazil | 32,44 | 58,34 | 45,39 |
| 9 | Beeline Bikes | USA | 100,00 | 30,86 | 65,43 |

| | | | | | |
|----|------------------------|-------------|--------|-------|-------|
| 10 | Bidgely | USA | 100,00 | 25,60 | 62,80 |
| 11 | BitGym | USA | 100,00 | 40,22 | 70,11 |
| 12 | BitTorrent | USA | 100,00 | 58,99 | 79,49 |
| 13 | BlockCypher | USA | 100,00 | 35,90 | 67,95 |
| 14 | Blokable | USA | 100,00 | 32,35 | 66,17 |
| 15 | Blossom | USA | 100,00 | 31,99 | 65,99 |
| 16 | BucketFeet | USA | 100,00 | 40,16 | 70,08 |
| 17 | Busuu | UK | 58,56 | 48,71 | 53,64 |
| 18 | Campus Explorer | USA | 100,00 | 56,76 | 78,38 |
| 19 | Canary | USA | 100,00 | 51,74 | 75,87 |
| 20 | Capillary Technologies | Italy | 41,07 | 69,09 | 55,08 |
| 21 | Casengo | Netherlands | 58,24 | 68,79 | 63,51 |
| 22 | Citymapper | UK | 58,56 | 74,75 | 66,65 |
| 23 | Clearpath Immigration | USA | 100,00 | 58,53 | 79,27 |
| 24 | Cleeng | Netherlands | 58,24 | 47,45 | 52,85 |
| 25 | Cloudability | USA | 100,00 | 34,83 | 67,41 |
| 26 | CodeHS | USA | 100,00 | 20,62 | 60,31 |
| 27 | Contactually | USA | 100,00 | 45,83 | 72,91 |
| 28 | CoPromote | USA | 100,00 | 32,25 | 66,13 |
| 29 | Copub | Turkey | 28,26 | 33,66 | 30,96 |
| 30 | Daily Secret | USA | 100,00 | 32,16 | 66,08 |
| 31 | Databox | USA | 100,00 | 46,36 | 73,18 |
| 32 | DataFox | USA | 100,00 | 21,94 | 60,97 |
| 33 | Demeure | France | 43,69 | 70,79 | 57,24 |
| 34 | DermLink | USA | 100,00 | 51,84 | 75,92 |
| 35 | Descomplica | Brazil | 32,44 | 72,37 | 52,40 |
| 36 | Disconnect | USA | 100,00 | 47,19 | 73,60 |
| 37 | DNAexus | USA | 100,00 | 47,86 | 73,93 |
| 38 | Empire Avenue | USA | 100,00 | 32,46 | 66,23 |
| 39 | EnglishCentral | USA | 100,00 | 56,78 | 78,39 |
| 40 | Enplug | USA | 100,00 | 41,92 | 70,96 |
| 41 | Epic Playground | USA | 100,00 | 31,43 | 65,72 |
| 42 | EverTrue | USA | 100,00 | 29,37 | 64,69 |
| 43 | Factual | USA | 100,00 | 49,39 | 74,69 |
| 44 | FiscalNote | USA | 100,00 | 28,39 | 64,19 |
| 45 | FlyData | USA | 100,00 | 43,86 | 71,93 |
| 46 | Food Genius | USA | 100,00 | 29,44 | 64,72 |
| 47 | Formlabs | UK | 58,56 | 38,25 | 48,41 |
| 48 | Fundraise.com | USA | 100,00 | 28,23 | 64,11 |
| 49 | GageIn | USA | 100,00 | 50,71 | 75,36 |
| 50 | Geckoboard | UK | 58,56 | 36,52 | 47,54 |
| 51 | Geekatoo | USA | 100,00 | 30,42 | 65,21 |
| 52 | Gigwalk | USA | 100,00 | 55,33 | 77,67 |
| 53 | GinzaMetrics | USA | 100,00 | 52,96 | 76,48 |
| 54 | GLIX | Italy | 41,07 | 51,76 | 46,42 |
| 55 | HappyCo | Australia | 54,71 | 49,25 | 51,98 |

| | | | | | |
|------------|-----------------|-------------|--------|-------|--------------|
| 56 | Hole19 | UK | 58,56 | 38,84 | 48,70 |
| 57 | HWTrek | China | 63,24 | 31,79 | 47,51 |
| 58 | Ijendu | Spain | 41,16 | 45,32 | 43,24 |
| 59 | Infrascale | USA | 100,00 | 52,64 | 76,32 |
| 60 | iQ Technologies | USA | 100,00 | 54,00 | 77,00 |
| 61 | Jawfish Games | USA | 100,00 | 45,20 | 72,60 |
| 62 | Jeeran | Jordan | 0,14 | 42,43 | 21,28 |
| 63 | JetBay | China | 63,24 | 64,06 | 63,65 |
| 64 | Kitchit | USA | 100,00 | 44,40 | 72,20 |
| 65 | Klutch | USA | 100,00 | 42,21 | 71,11 |
| 66 | Kompany | Austria | 0,18 | 33,29 | 16,73 |
| 67 | Kwarter | USA | 100,00 | 36,58 | 68,29 |
| 68 | LaunchDarkly | USA | 100,00 | 43,23 | 71,62 |
| 69 | Locality | USA | 100,00 | 41,48 | 70,74 |
| 70 | Lyst | UK | 58,56 | 58,70 | 58,63 |
| 71 | Mapillary | Sweden | 52,51 | 53,54 | 53,03 |
| 72 | MarianalQ | India | 31,80 | 75,70 | 53,75 |
| 73 | Matchmade | Finland | 0,20 | 43,00 | 21,60 |
| 74 | Medlert | USA | 100,00 | 29,54 | 64,77 |
| 75 | Mirror | USA | 100,00 | 54,95 | 77,47 |
| 76 | Mixbook | USA | 100,00 | 47,51 | 73,76 |
| 77 | MixRank | USA | 100,00 | 35,32 | 67,66 |
| 78 | Mobly | Israel | 0,28 | 38,31 | 19,29 |
| 79 | Monolith | Netherlands | 58,24 | 48,31 | 53,28 |
| 80 | Morty | USA | 100,00 | 13,45 | 56,73 |
| 81 | MyTime | USA | 100,00 | 62,91 | 81,45 |
| 82 | Nexmo | USA | 100,00 | 24,18 | 62,09 |
| 83 | Nima | USA | 100,00 | 17,30 | 58,65 |
| 84 | Nuji | UK | 58,56 | 47,98 | 53,27 |
| 85 | OfferUp | USA | 100,00 | 45,84 | 72,92 |
| 86 | Origami | Japan | 18,68 | 34,41 | 26,54 |
| 87 | OurCrowd | Israel | 0,28 | 59,67 | 29,98 |
| 88 | OwnLocal | USA | 100,00 | 44,00 | 72,00 |
| 89 | PageFair | Ireland | 51,87 | 40,42 | 46,14 |
| 90 | PathFlow | Italy | 41,07 | 59,83 | 50,45 |
| 91 | PayTouch | Spain | 41,16 | 35,32 | 38,24 |
| 92 | PowerReviews | USA | 100,00 | 32,24 | 66,12 |
| 93 | Preen.Me | Israel | 0,28 | 65,20 | 32,74 |
| 94 | Prosodic | USA | 100,00 | 74,94 | 87,47 |
| 95 | Psykosoft | UK | 58,56 | 39,19 | 48,87 |
| 96 | Qstream | USA | 100,00 | 44,21 | 72,10 |
| 97 | Reaction | USA | 100,00 | 34,94 | 67,47 |
| 98 | Redbooth | USA | 100,00 | 42,88 | 71,44 |
| 99 | Remind | USA | 100,00 | 44,83 | 72,42 |
| 100 | Republic | USA | 100,00 | 17,66 | 58,83 |
| 101 | RiskIQ | USA | 100,00 | 58,26 | 79,13 |

| | | | | | |
|-----|----------------|-------------|--------|-------|--------------|
| 102 | Samanage | Israel | 0,28 | 31,85 | 16,06 |
| 103 | Scripted | USA | 100,00 | 22,73 | 61,36 |
| 104 | SideChef | China | 63,24 | 34,92 | 49,08 |
| 105 | Skimlinks | UK | 58,56 | 16,66 | 37,61 |
| 106 | SlamData | USA | 100,00 | 51,63 | 75,82 |
| 107 | Slated | USA | 100,00 | 53,41 | 76,70 |
| 108 | Smore | Israel | 0,28 | 50,47 | 25,37 |
| 109 | Social Rewards | USA | 100,00 | 53,77 | 76,88 |
| 110 | SocialPandas | USA | 100,00 | 31,18 | 65,59 |
| 111 | Soothe | USA | 100,00 | 16,82 | 58,41 |
| 112 | Spacious | China | 63,24 | 44,28 | 53,76 |
| 113 | Storenvy | USA | 100,00 | 27,06 | 63,53 |
| 114 | Streamup | USA | 100,00 | 51,14 | 75,57 |
| 115 | Switchcam | USA | 100,00 | 54,32 | 77,16 |
| 116 | Synthace | UK | 58,56 | 37,57 | 48,06 |
| 117 | Tala | Kenya | 0,17 | 39,47 | 19,82 |
| 118 | TapCanvas | USA | 100,00 | 66,35 | 83,18 |
| 119 | Trazzler | USA | 100,00 | 44,79 | 72,40 |
| 120 | Trippo | Canada | 44,34 | 42,61 | 43,47 |
| 121 | Tushky | India | 31,80 | 21,07 | 26,43 |
| 122 | Umbel | USA | 100,00 | 37,27 | 68,64 |
| 123 | Unified | USA | 100,00 | 26,40 | 63,20 |
| 124 | Vessel | USA | 100,00 | 46,64 | 73,32 |
| 125 | Vigour | Netherlands | 58,24 | 54,27 | 56,26 |
| 126 | Vungle | USA | 100,00 | 41,22 | 70,61 |
| 127 | Vurb | USA | 100,00 | 38,35 | 69,18 |
| 128 | Walkbase | Finland | 0,20 | 59,18 | 29,69 |
| 129 | Wave | Canada | 44,34 | 54,20 | 49,27 |
| 130 | Youbetme | USA | 100,00 | 22,06 | 61,03 |
| 131 | Zanbato | USA | 100,00 | 26,18 | 63,09 |
| 132 | Zazzy | Netherlands | 58,24 | 62,46 | 60,35 |
| 133 | Ziptask | USA | 100,00 | 51,89 | 75,94 |
| 134 | ZipZap | Canada | 44,34 | 34,05 | 39,20 |
| 135 | Zvooq | Russia | 27,95 | 39,72 | 33,84 |

Figure 38 – 135-Startup Database with Macro-ranking and Micro-ranking; Personal Processing

The sample represented in *Figure 38*, is composed by 135 startups randomly selected and operating in 20 different Countries. In particular, the distribution of these startups among their Country-of-operation is described in the next graph (*See Figure 39*).

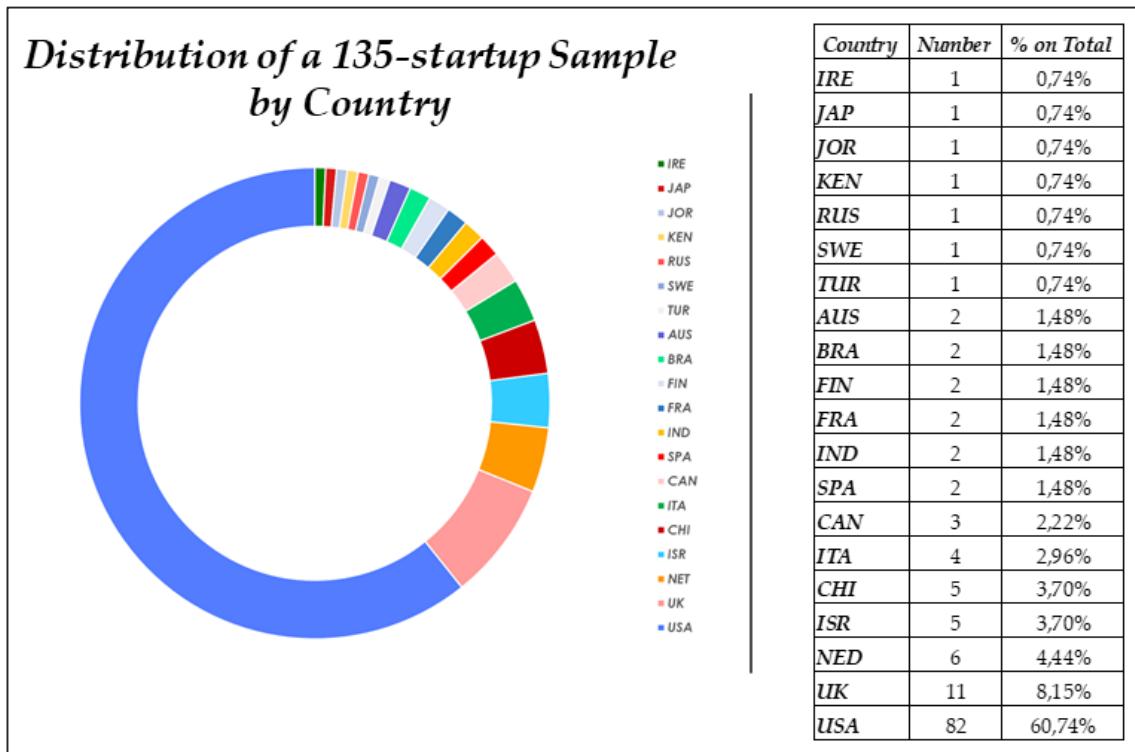


Figure 39 – Distribution of a 135-startup Sample by Country; Personal Processing

In the following section, the companies here presented will be studied by applying the model described in the previous chapter (*See Section 5.1*).

Furthermore, a brief statistical overview will be presented in order to give data a more meaningful dimension.

5.3 EMPIRICAL ANALYSIS

In this chapter will be presented an empirical application of the model over the 135-startup sample, both described in previous sections (*See Section 5.1 and Section 5.2*).

In particular, the following analysis will be segmented into four main sub-sections, namely: *Model Application, Statistical Analysis, Rating System and Probabilistic Breakdown*.

5.3.1 MODEL APPLICATION

Given the previously described database (*See Section 5.2*), we applied the model described in *Section 5.1* in order to both test it and generate some useful statistics.

Since the first and the second step of the model application – concerning the 135 startups satisfying our definition and the Macroeconomic ranking – as well as their results already appear in previous sections (*See Sections 5.2 and 2.6*), we'll focus primarily on the Micro-

economic data resulting from the application of the model over the database.

In particular, the three indexes composing the Micro-ranking – DME, BMSI and Accountability – have been analyzed *per-se* as well as in comparison to one-another.

(i) DME index:

As previously discussed (*See Section 4.4.4*), the DME index represents a measure of the marketing efficiency given a number of assumptions. In particular, the formula which has been developed has as primary objective to measure the efficiency related to digital-marketing activities; to recap, the formula used is:

$$\varepsilon = \frac{\gamma \cdot \bar{P}}{I/t}$$

Via the previous formula, we calculated the digital marketing efficiency impact (ε) over revenues for the 135 startups sample. The results are shown in *Figure 40*:

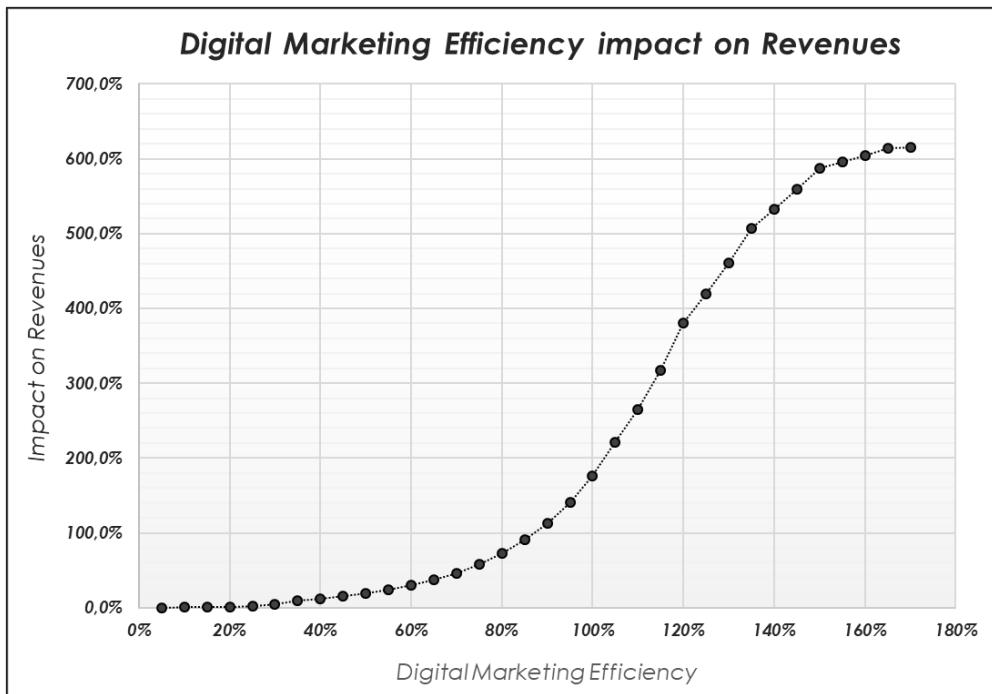


Figure 40 – DME index Impact (ε) over Revenues for a 135-startup Sample; Personal Processing

The results shown in the previous figure appeared particularly interesting. In particular, we can clearly depict how there's a quite strong correlation between the DME index and the increase of Revenues. Especially, it resulted that at low-to-medium DME values (0%-60%), the impact of marketing on revenues is pretty stagnant, with a maximum peak of 40%. After the 60% threshold, however, the curve gradient changes abruptly, which makes the curve rise until

the second threshold (of 120%) when it starts flattening to reach its climax at 165%.

Interestingly enough, the best DME index value range, in terms of marketing impact on revenues, is between 100% and 135%.

For instance, firms positioning inside this interval see their marketing efforts generating a 200%-to-500% impact on revenues; meaning that for every dollar spent on marketing their increase in returns will be the average marketing Return On Investment (ROI) multiplied by the DME index.

To exemplify, a startup with a 5% ROI on digital marketing (which is the industry average) and a DME index increasing from 100% to 120% will see its ROI jumping to an astonishing 10%. If the same company (with a 5% ROI) had a DME index increasing from 120% to 140%, its ROI would still increase, but at a slower pace: from 5% to 8,5%.

However, if the company had a DME increasing of a similar amount, from 140% to 160% (which means the DME is above the 135% threshold), its ROI would even start decreasing, from 5% to 2,5%.

This data, although based on relatively a small sample, can give some very powerful insights.

In particular, the effect of the DME over the marketing performance, expressed in terms of ROI, is all but negligible.

The previous graph clearly shows how the performance of digital marketing activities is extremely sensitive to changes in the overall efficiency. This means that, through a correct analysis of the factors determining the DME index, startups may drastically improve (or, if the opposite is true, worsen) their performance in terms of marketing.

It appears clear, thus, how understanding the meaning and the relevance of digital marketing and its essential indicators may have a huge impact over a company's performance.

Nevertheless, the majority of startups on the database present values of the DME index which are far from optimal. As shown in the next graph (*See Figure 41*), understanding what are the variables to monitor in respect to digital marketing should be a critical focus for companies. It is clearly depictable that most companies (80 out of 135) present a *DME index* which is comprehended between 40% and 85%, meaning that their sub-optimal marketing practices are hampering their potential ROI, while only 19 of the 135 startups (the 14,1%) have a DME above 120% (*See Figure 41*).

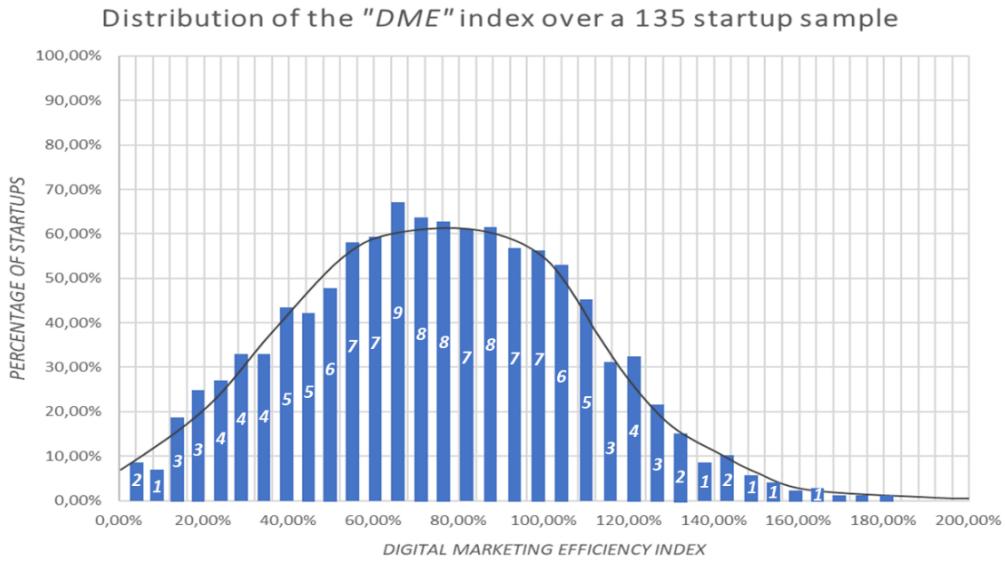


Figure 41 – Distribution of the Digital Marketing Efficiency index for a 135 startups sample; Personal Processing

The real challenge for the former organizations, thus, is to try and understand which marketing metrics are directly controlled by them and, consequently, to engage in a process with the aim of pushing their DME, at least, above the 100% threshold in order to start yielding the real benefits of digital marketing, or at least stop suffering from its collateral effects.

For the few companies presenting a DME index exceeding the 135% threshold, on the contrary, it is essential to make sure that they are not overspending on marketing, as that could have the same effects as if they were not investing enough.

(ii) BMSI index:

The second variable in analysis, as discussed (*See Section 4.4.4*), is the Business Model's Strategic Integrity (BMSI) index, which represents a measurement for the business model's efficiency. In particular, the formula which has been developed has the aim of measuring the degree of efficiency related to a company's business model.

The variables which come into play in the definition of this index are: *scalability, repeatability, robustness, flexibility* and *uniqueness*.

The next figure shows the BMSI index for the 135-startup sample:

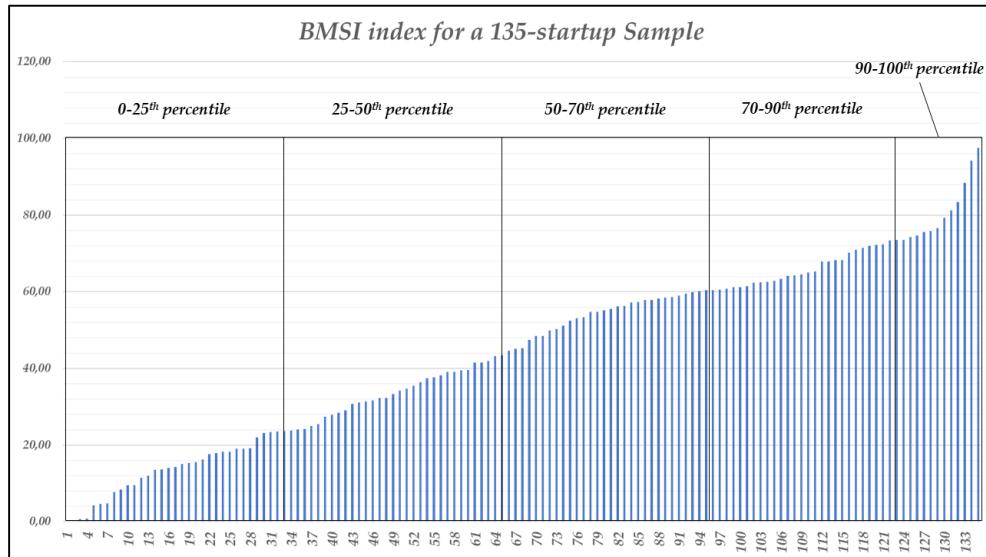


Figure 42 – BMSI index with Percentile Classes for a 135-startup Sample

As shown in *Figure 42*, almost 60% of the companies in the sample present BMSI values which are below 50%. Meaning that almost 80 startups out of 135 have business models which are either *Non-efficient* (37) or *Poorly efficient* (43). Of the remaining 40% of the sample (55 out of 135), 35 startups present *Averagely efficient* BMs, 18 *Highly efficient* BMs and only 2 have *Completely efficient* business models.

Since this measure represents BMs, it refers to the degree to which a startup is capable of developing a set of processes which generate a positive return.

From the empirical measurements of this index it is clearly depictable how the majority of our sample's firms are at a stage of sub-efficiency when it comes to business models.

In a nutshell, this means that either the revenues generated by these companies are being “capped” or costs are being “inflated” by inefficient practices, and, thus, that they’re not fully exploiting their potential.

It appears crucial for these firms, hence, to implement some measures aimed at improving the BMSI index, in order to minimize the costs/revenues ratio until its optimal level.

(iii) Accountability index:

The third, and last, variable in analysis, refers to what has been called the Accountability index, which represents a measurement for the financials and the accounting status of startups. In particular, this index has the aim of measuring the degree of efficiency related to a company's accounting practices as well as their financial condition.

The index is composed by four sub-variables which have been measured for the entire sample: *Revenue Growth*, *Gross Margin*, *Contribution Margin* and *Churn Rate*.

In our 135-startup sample, the accountability index (whose values are scaled on a 0-100 interval) ranged from a minimum value of 20,60 to maximum one of 73,93, with an average value of 43,68. Results are shown in the following figure:

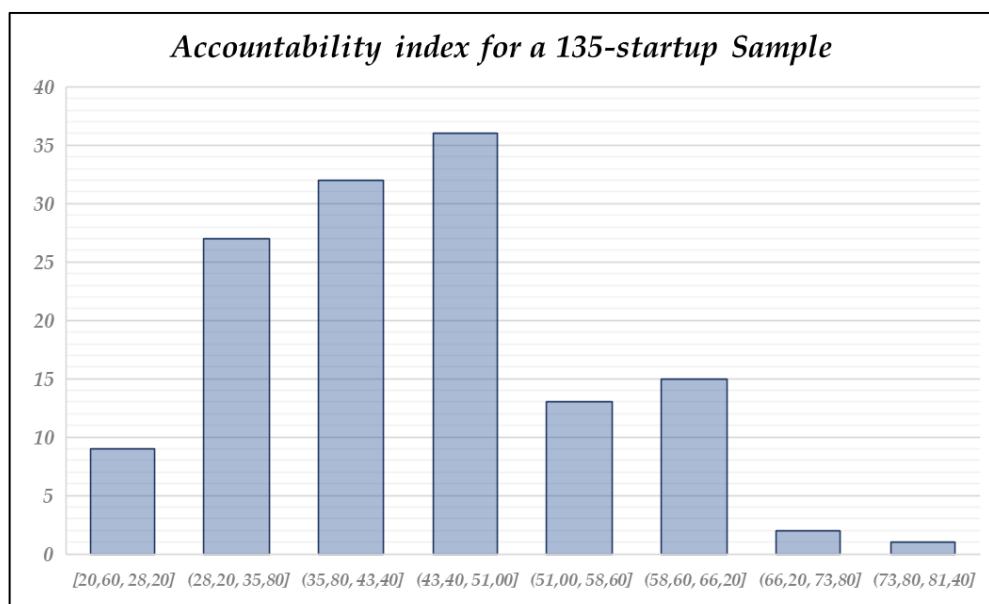


Figure 43 – Accountability index for a 135-startup Sample; Personal Processing

Differently from the previous indicators, however, these values show an averagely positive tendency of our sample. In particular, having the lowest value set at more than 20 out of 100, shows that startups, on average, tend to be pretty concerned about financials, regardless of their stage of development, their Country of operation or the industry they're focusing on.

From such data, hence, we can depict that startups appear to be, in a way, more concerned of their financial status than of their ability to properly market their products or to be structurally efficient. Despite being a quite respectable practice if the aim is to attract investments, it should be understood how the three micro-variables analyzed have an equivalent impact over the probabilities of success and, consequently, companies should be allocating to the three of them – ideally – the same amount of resources.

Nevertheless, the results of this indicator appear quite encouraging, especially if we consider that the sample has been randomly selected and, thus, these companies may be experiencing very distant phases of their lifecycle.

5.3.2 STATISTICAL ANALYSIS

The next step involved in this study is a statistical analysis conducted over the data resulting from the application of the model over the 135-startup database (*See Section 5.3.1*).

This analysis has the primary aim of identifying possible correlations between the variables of the model; in addition to that, it is a straightforward method to generate useful insights over the sample and the startup phenomenon in general.

In order to obtain meaningful results through a comparison of these statistics, they have been conducted on three sets of data: *general statistics* (meaning statistics conducted over the entire sample), *Country-specific statistics* and *Regional statistics* (conducted on groups obtained by agglomerating Countries into three geographic regions).

(i) General Statistics:

For what concerns the “general” data, we calculated the average values for both the Macro-ranking and the Micro-ranking in relation to the entire 135-startup sample; we also studied their respective variance as well as the correlation between Micro and Macro results.

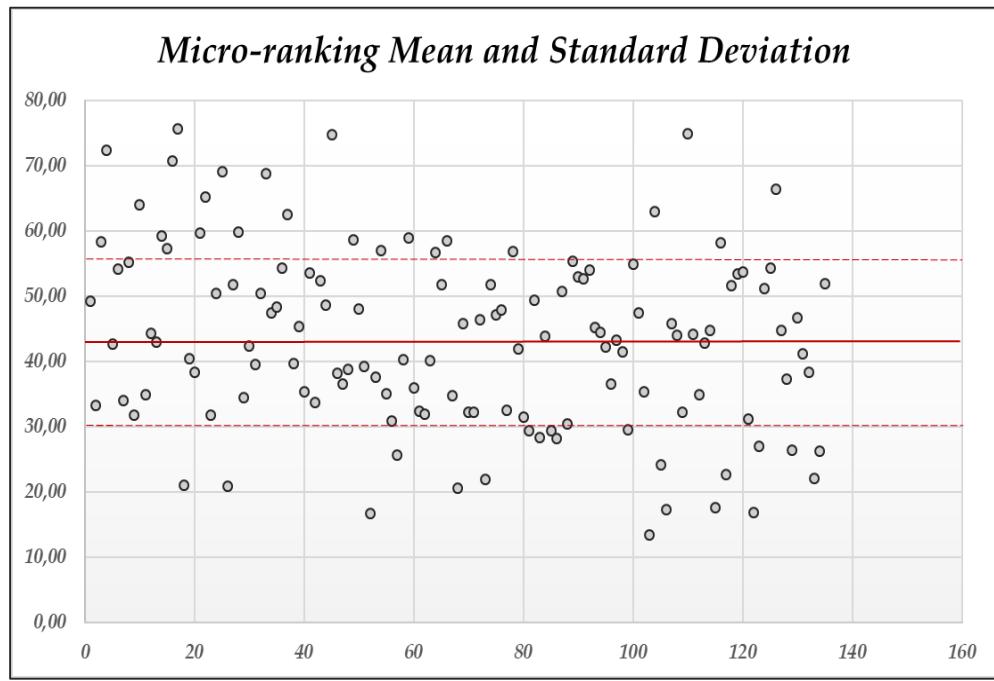


Figure 44 – Micro-ranking Mean and SD for the entire 135-startup sample; Personal Processing

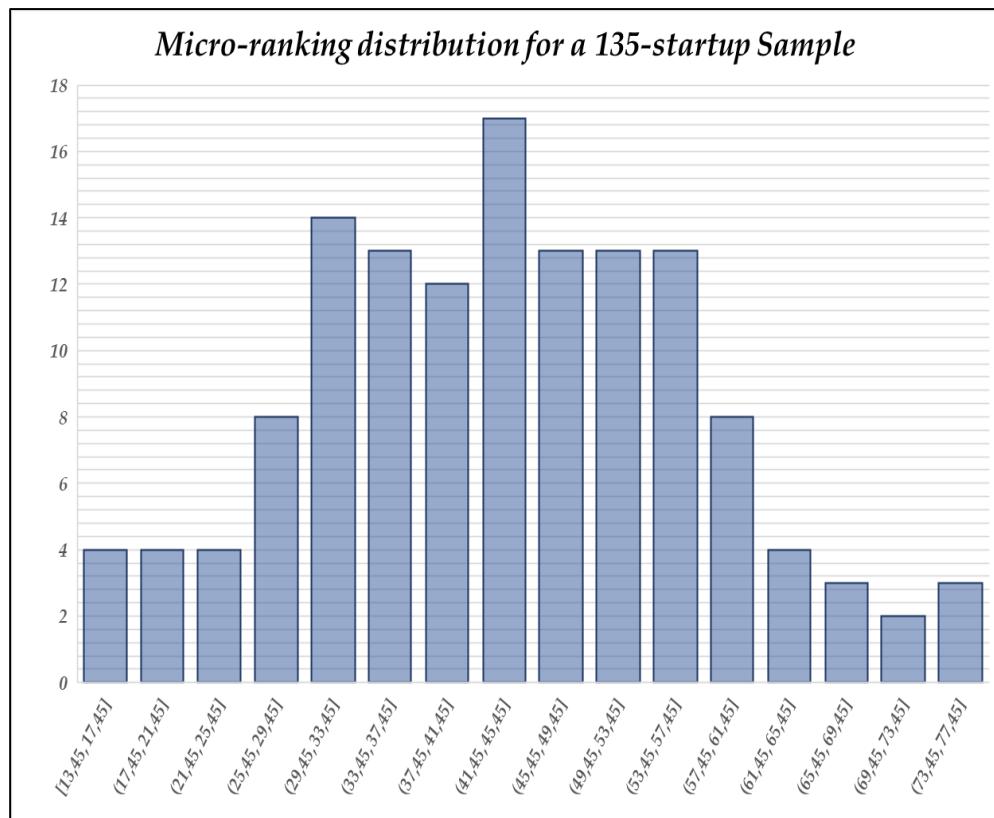


Figure 45 – Micro-ranking Distribution for a 135-startup Sample; Personal Processing

In the previous graphs it is reported the distribution of the single-firm's scores regarding the Micro-ranking as well as the mean and relative Standard Deviation (SD).

From the analysis resulted that our sample's startups scored an average Micro-ranking value of 43,54, with a SD of 13,65.

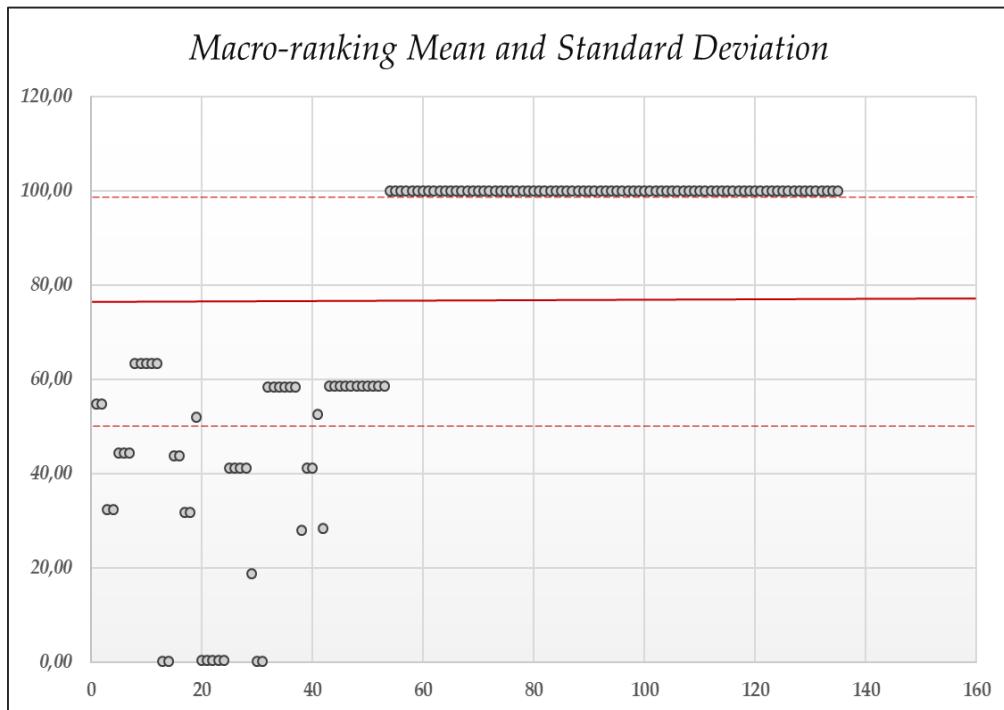


Figure 46 – Macro-ranking Mean and SD for the entire 135-startup sample; Personal Processing

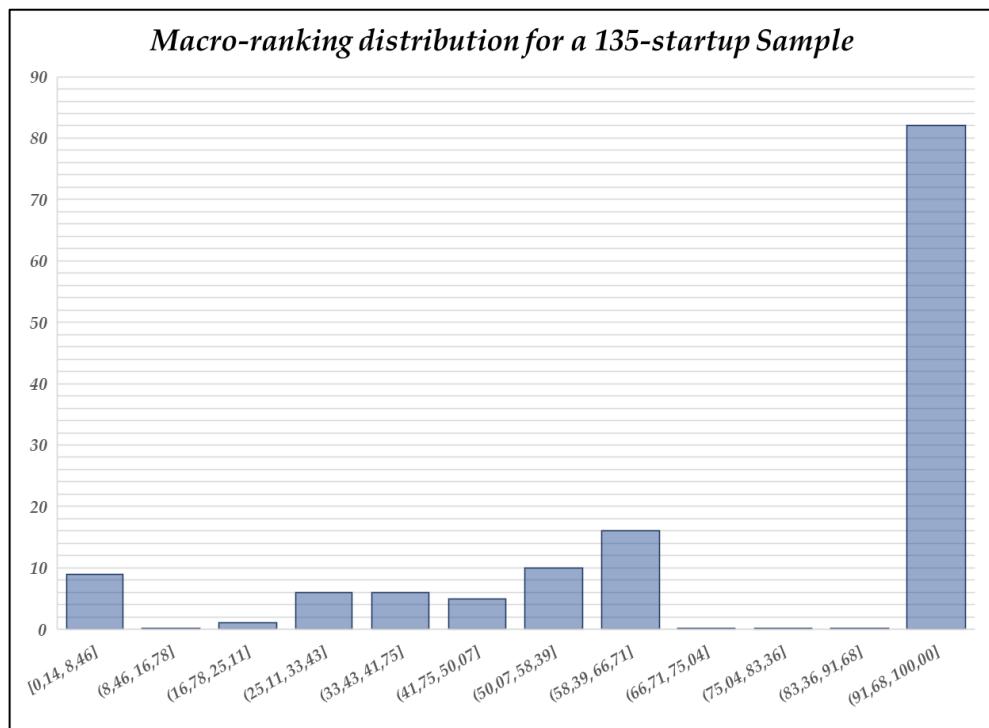


Figure 47 – Macro-ranking Distribution for a 135-startup Sample; Personal Processing

For what concerns the Macro-ranking, startups scored an average value of 77,01, with a SD of 31,78. However, by comparing *Figure 45* with *Figure 47*, we can clearly depict how scores concerning the Macro-ranking are much more inhomogeneous respect to those of the Micro-ranking.

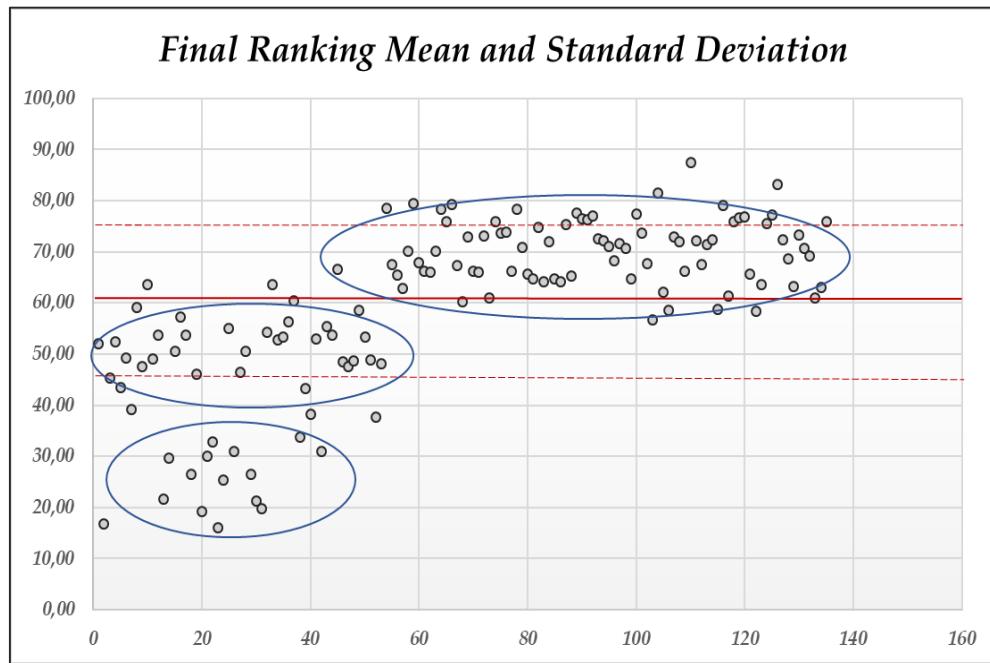


Figure 48 – Final-Ranking Mean and SD for the entire 135-startup sample; Personal Processing

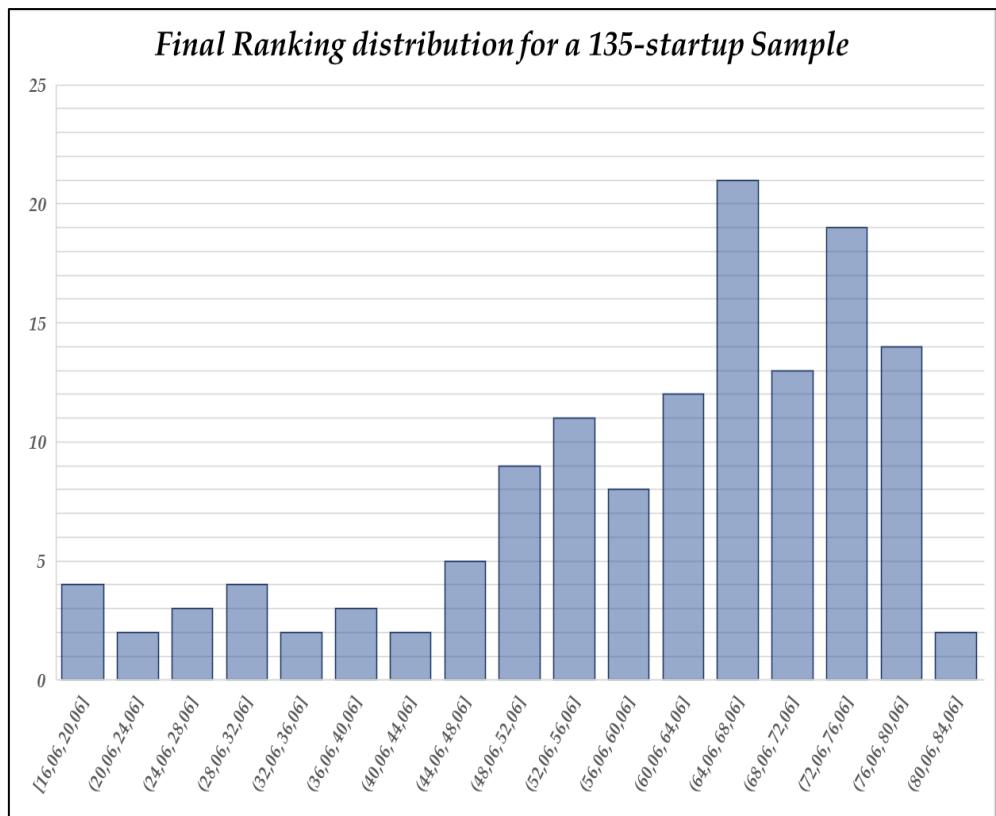


Figure 49 – Final Ranking Distribution for a 135-startup Sample; Personal Processing

Finally, if we consider the values of the final Ranking showed in *Figure 48* and *Figure 49* (Composed by both the Macro-ranking and the Micro-ranking values), it results an average score of 60,07 with a SD of 16,16.

From the previous figures, however, we can depict that while – on average – startups perform rather homogeneously in terms of Micro-variables, they tend to have much more dispersed scores when it comes to the Macro-variables.

In particular, in *Figure 47* we can clearly see how there's a noticeable gap between startups scoring very high (100/100) and the rest of the sample. Also, *Figure 48* clearly shows how there's a huge distance between three categories of firms: one in which startups' score sets between 15 and 35, one between 45 and 60 and another between 60 and 80.

This suggest that these inhomogeneities in the final ranking in comparison to the Micro-ranking may be due to the fact that those startups operating in extremely startup-friendly Countries may perform – on average – worse than startups operating in more challenging environments.

For instance, when comparing the average Micro-ranking of startups scoring less than 60/100 on the Macro-ranking with the average Micro-ranking of those companies scoring more

than 60/100, it results that the latter's (those operating in extremely startup-friendly environments) average performance of 41,089 is, indeed, quite lower than the former's average performance of 47,992.

(ii) Country-specific Statistics:

For what concerns Country-specific data, as in the previous section, we calculated the average values for both rankings in relation to the 20 Countries represented by the sample; and we also studied their respective variances as well as the correlation between Micro and Macro results.

For a statistical purpose, however, we decided not to report the results obtained from those Countries which are represented by less than 4 startups; in the next graph (*See Figure 50*), thus, we find the 7 most represented Countries in the sample.

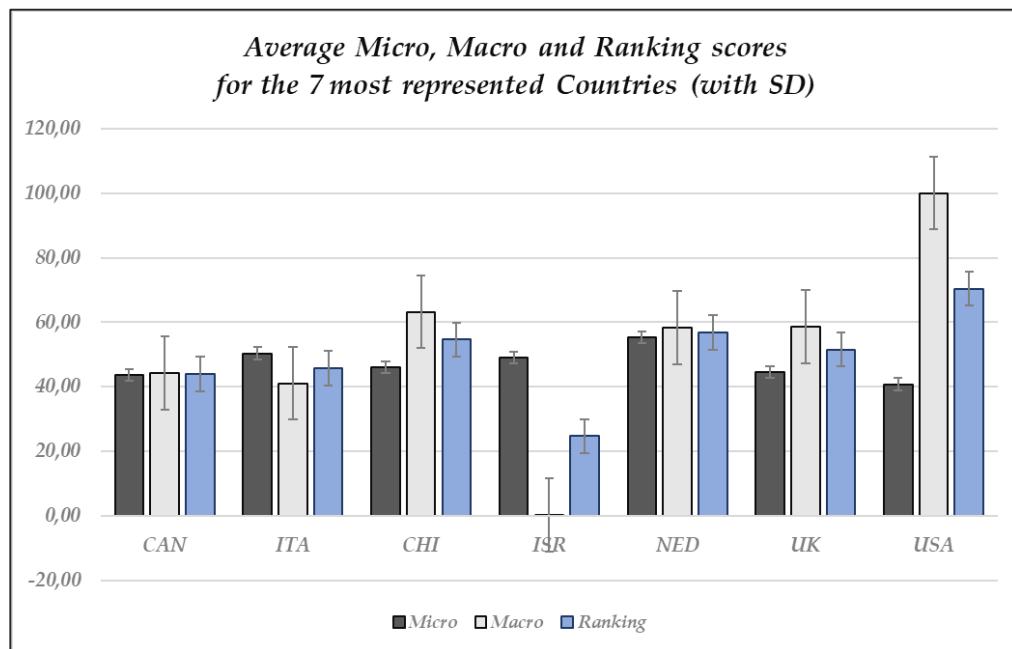


Figure 50 – Average Micro, Macro and final Ranking for the 7 most represented Countries, Personal Processing

From the previous figure we can depict that there may be an inverse proportion – or, at least, correlation – between Micro and Macro scores. Indeed, the correlation between Micro-ranking and Macro-ranking scores for the entire 135-startup sample resulted -0,22659848. Thus, it appears that at above-average Macro-scores (USA and China) correspond below-average Micro-scores. Additionally, the opposite appears to be also true: for instance, Italy and Israel, which present a Macro-ranking below-average, are scoring an above-average Micro-ranking.

These finding may be, thus, in line with what arose from the results of the previous section: in a startup-friendly environment, companies seem to be performing worse at an individual level than those operating in more adverse conditions.

(iii) Regional Statistics:

In order to have a more complete perspective, we introduced a third analysis which, basically, merges the previous two.

In particular, allocating the 135 startups in 3 broader groups should help to understand if the hypothesis emerged from the previous analysis is, indeed, meaningful.

The three groups just mentioned can be described as: USA & Canada, EU & Turkey, Rest of the World.

Results are shown in the next graph:

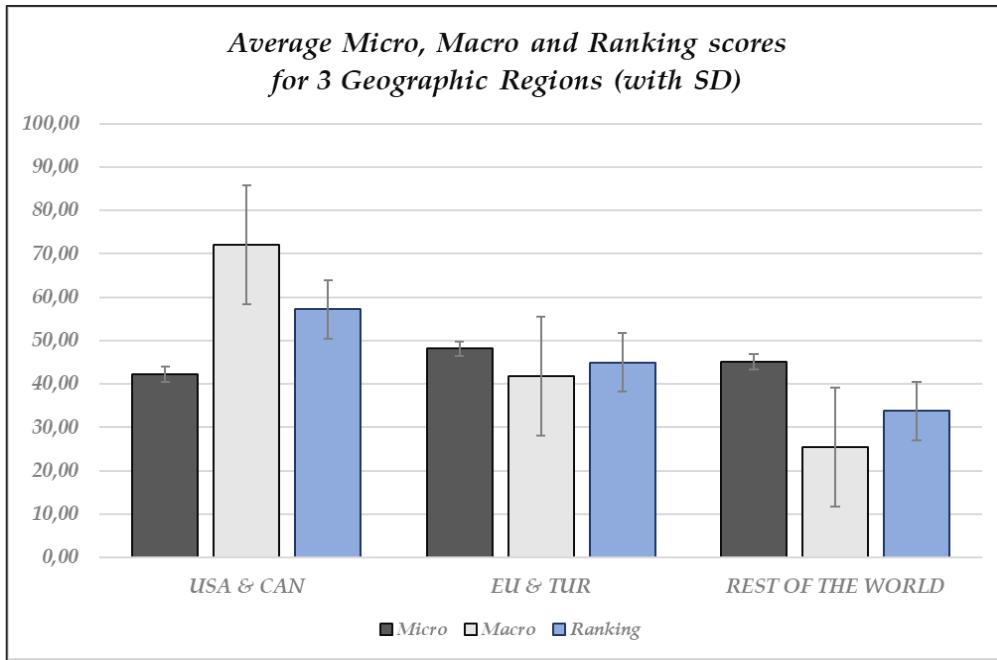


Figure 51 – Average Micro, Macro and final Ranking for 3 Geographic Regions, Personal Processing

Once again, the data shown in the previous figure describe a situation which confirms the hypothesis arisen from the previous sections. In particular, the correlation between the Micro and Macro variables for the three groups appeared negative, with a value of -0,041586081 for USA & Canada, -0,014119242 for EU & Turkey and -0,040308932 for the Rest of the World.

Hence, those regions where the Country-specific scores are the highest are those in which – proportionally – startups perform the worst.

Such findings appear particularly meaningful from an economic-policies standpoint.

In particular, evidence shows that the indirect impact of policy-makers could be crucial to define a new way of successful startups. Those economies in which startups struggle are, by the same token, the ones where those who succeed become – often – highly-performing companies.

5.3.3 RATING SYSTEM

Starting from the results of the previous chapter (*See Section 5.3.2*), we developed a *success rating system* which will enable us to identify every startup with a “class” defining its probability of success.

The parameter which will be used to define startups’ membership to a class is the value of the final Ranking. By doing so, the model described until now becomes an actual tool which could be adopted by any *stakeholder*²³ to investigate a startup in terms of “probability of success”.

²³ The term *stakeholder* identifies a party that has an interest in a company, and can either affect or be affected by that company’s business. The principal stakeholders in a typical corporation are its investors, employees and customers. However, the modern theory of the idea goes beyond this original notion to include additional stakeholders such as a community, government or trade association.

The concept behind the success rating system has been borrowed from classical Financial Credit-Rating systems. We are, thus, introducing a way of evaluating the probabilities of success in terms of *failure risk*; meaning that the higher the Ranking score, the lower the probability of failure associated to that startup. Indeed, in credit risk, a rating class is related to a quantified probability of default computed on a statistical basis. However, we won't perform this kind of statistical analysis, we are only going to define four classes in relation to a diminishing risk.

All rating systems adopted worldwide, begin with a *reporting system*, which identifies a numerical evaluation of an agent's worthiness in a specific field, for example credit. For instance, our *success rating system* will have its foundations on the *success reporting system* which we named "final Ranking".

The rating has been divided into four *classes*, from A (the highest) to D (the lowest), that represent a 25th percentile each. Class D startups, thus, will be those having a final Ranking score between 0 and 25, class C between 25 and 50, class B between 50 and 75 and class A between 70 and 100.

Results are shown in *Figure 52*:

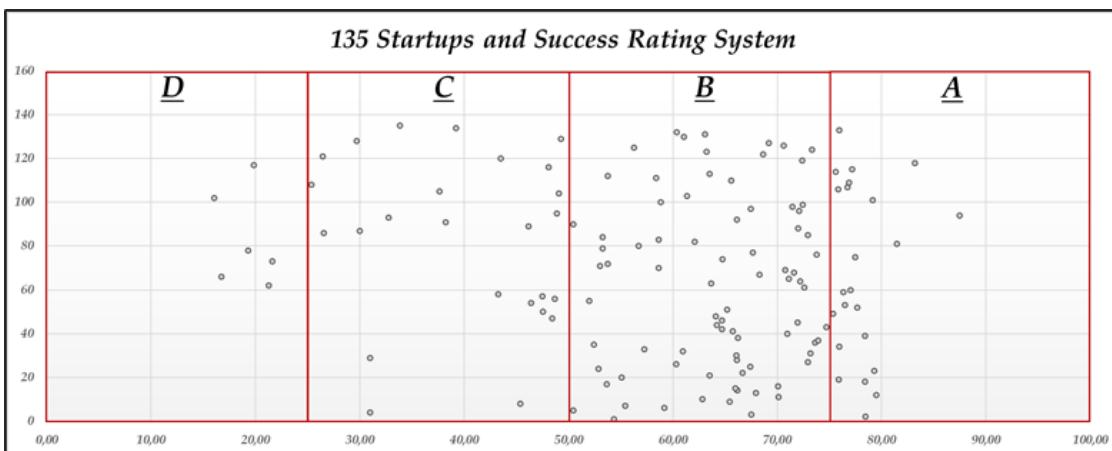


Figure 52 – 135 startups and the Success Rating System; Personal Processing

Each class was, then, associated with a qualitative measure expressing the probability of success for startups belonging to that class. In particular, classes can be related to a reviewed linear version of the so-called *BCG Matrix*²⁴. Especially, class D identifies “dogs” startups, which urgently need some deep changes in order to have some meaningful probabilities of success; class C refers to “question marks”, which are in a sort of *limbo* phase, were major restructuring are having the first tangible effects or where some minor adjustments still need to be done; class B stays for “cash-cows”, startups which have good performances and need to decide if either further growth is viable or a profitable exit option has to be identified; finally class A defines “stars”, which are industry-leading or extremely fast-growing companies.

²⁴ The Boston Consulting Group matrix, also known as the *growth-share matrix* is a framework developed in the late '60s by the leading consulting firm BCG in order to identify products according to growth and market-share. Since then, the matrix has been widely used to describe companies, in particular startups, for a quick identification.

The rating system thus composed and the allocation of the startups for the four classes in relation with their ranking scores are described in the next figure:

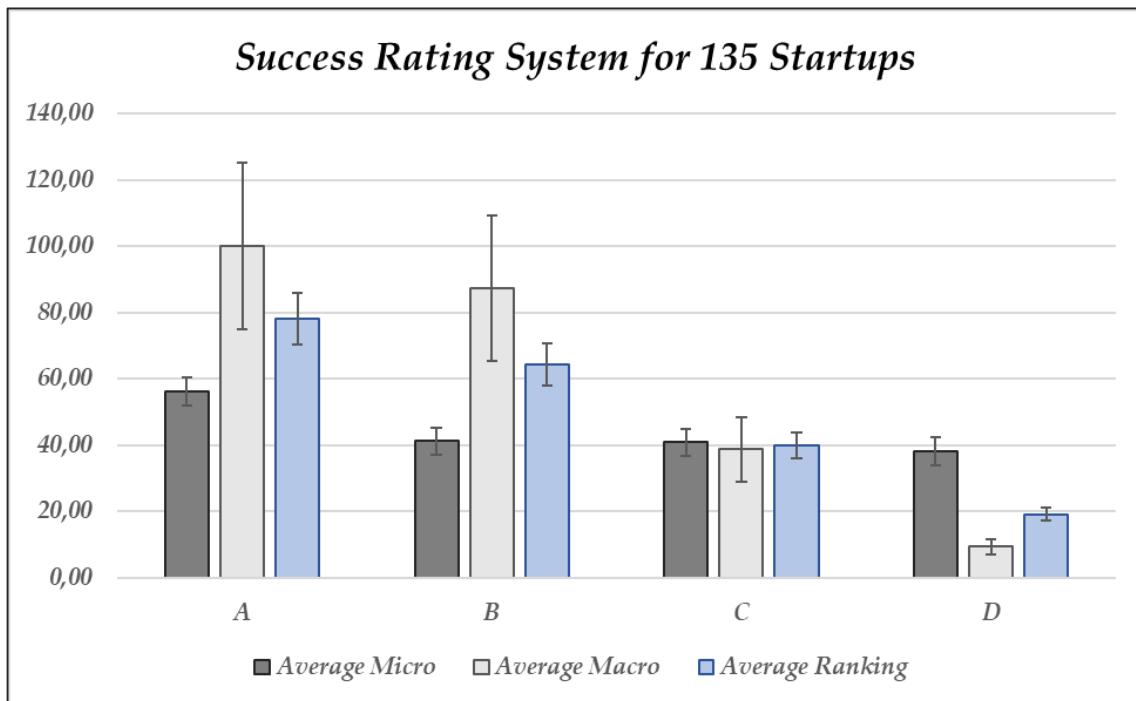


Figure 53 – Success Rating System for 135 Startups and relative ranking scores; Personal Processing

As shown in *Figure 53*, the most significant factor differentiating startups into the four rating classes is represented by their Macro-ranking score, while the average Micro-ranking score remains homogeneous across the sample.

These results, once again, support strengthen the idea that startups' success, at a firm-level, is influenced more deeply from endogenous variables than from exogenous ones.

5.3.4 PROBABILISTIC BREAKDOWN

As a final step in this analysis, we calculated the probabilities associated to the membership of a specific *rating class* – $P(\alpha)$ – (A, B, C or D) given the *geographic group* – $P(\beta)$ – (USA & Canada, EU & Turkey or Rest of the World) for a startup; in addition, we also calculated the probabilities to belong to a geographic group given the membership to a rating class.

In particular, we called $P(\alpha|\beta)$ the probability that a startup has of being in the rating “ α ” given that it belongs to a geographic region “ β ”.

On the contrary, we called $P(\beta|\alpha)$ the probability that a startup has of being in a geographic region “ β ” given that it has a rating value “ α ”.

Results are shown in the following figures:

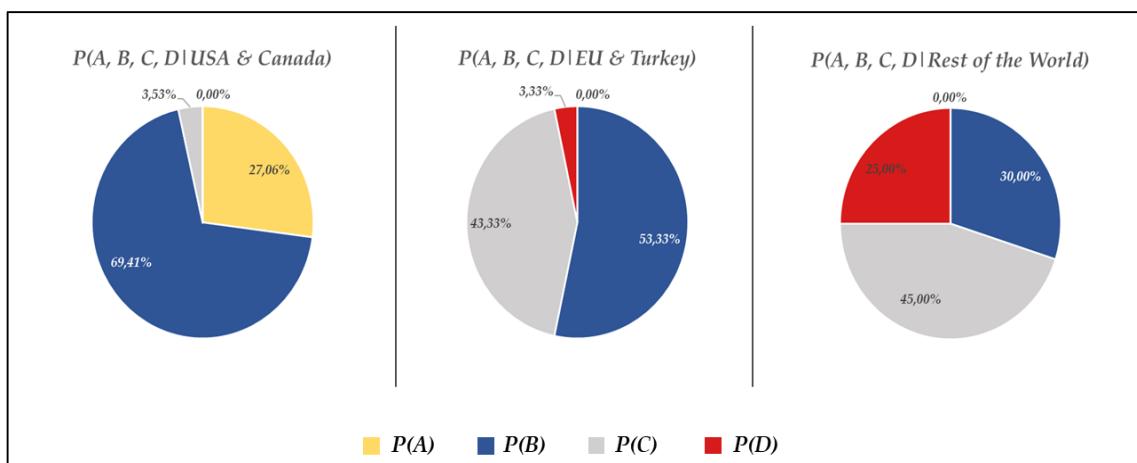


Figure 54 – Probability of Belonging to the Rating Classes A, B, C, D Given the Geographic Region; Personal Processing

As shown in *Figure 54*, the probability that a startup will be allocated in a specific rating class (A, B, C or D) seem to have a meaningful correlation with the geographic region that company belongs to.

In particular, startups operating in the US & Canada region seem to be more likely to obtain high ranking score, which result in them being allocated predominantly as class-B (69,41%) and class-A (27,06) startups. Companies operating in the EU & Turkey region, on the other hand, are more likely to score lower than the previous ones, resulting in a majority of them being class-B (53,33%) or class-C (43,33%). Those – fewer – companies operating in the Rest of the World region, despite appearing the most well-rounded group, present ranking substantially lower than the others, with class-C startups being the majority (45,00%), class-B the second-best (30,00%) and class-D the third sub-group (25,00%).

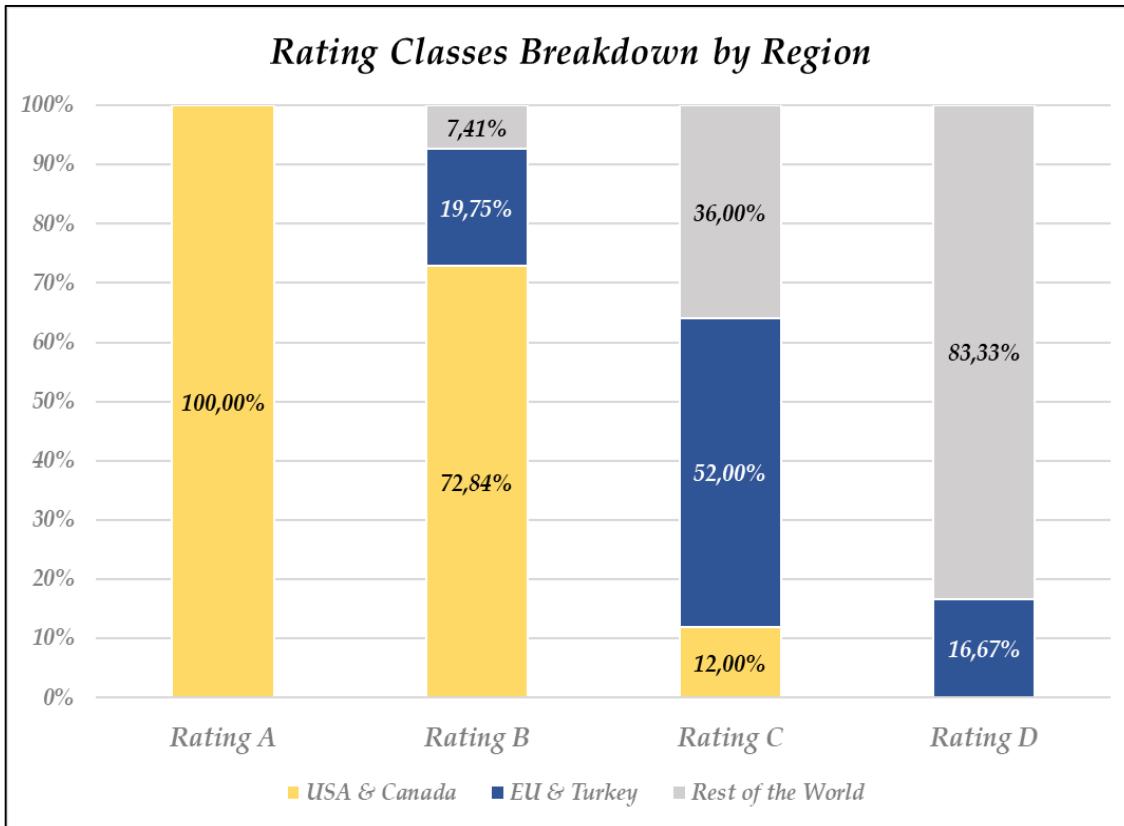


Figure 55 – Rating Classes Breakdown by Region; Personal Processing

As we can depict from *Figure 55*, the distribution of startups belonging to different regions among the different rating classes presents some major inhomogeneities. In particular, it appears indisputable how the majority (in this specific sample the totality) of class-A startups operate in the USA & Canada region, while class-D startups are predominant in the Rest of the World region.

These data, despite being the outcomes of merely *descriptive statistics*²⁵, appeared extremely meaningful in terms of results.

²⁵ *Descriptive statistics* are statistics meant to quantitatively describe features regarding a collection of information. They usually aim to summarize a sample, rather than use data to learn about the population that the sample of data is thought to be representative of. This means that descriptive statistics are not developed on the basis of probability theory.

Furthermore, since our sample was extrapolated through a robust process, data could be analyzed as a valid representation of the entire population of startups. Hence, although statistics' reliability and precision could be improved by increasing the sample size, some interesting conclusions can already be drawn starting from what emerged in this study. A study based on *inferential statistics*²⁶ could, thus, be an interesting subject for further study on this same topic.

The data obtained from this study, however, could result misleading if analyzed without the correct assumptions. For instance, while this paper has widely demonstrated that success – on a general level – has a clear correlation with the environment in which businesses operate, it has also underlined how performances at a firm-level are quite homogeneous regardless of geography.

²⁶ Statistical inference refers to the process of deducing properties of a probability distribution through the analysis of data. Such analysis, thus, has the primary aim of inferring properties about a population which is assumed to be larger than the observed data set. Inferential statistics is, thus, distinguished from descriptive statistics. Since the latter is solely concerned with properties regarding the observed data, and does not assume that data are pulled from a larger population.

6. CONCLUSION

A conclusive summarization over the topics and results emerged from this paper appears necessary in order to set the basis for some final comments.

The foundation upon which this thesis has been built, as discussed at the beginning of this paper, was the idea that economies presenting abundant startup ecosystems will breed high-performing startups, while opposite contexts won't generate comparable firms.

The first step in this analysis, thus, has been a macro-economical analysis which had the aim of understanding which are the major drivers influencing the development of startups within a Country. As its natural pursuance, a further study was conducted in order to introduce a method capable of describing the "startup-friendliness" level referred to a Country. Since the resulting measure describes the degree of Macro-economical variables influencing startups' development among Countries as a ranking, it has been called "*Macro-economic Ranking*".

The second step involved in this study was developing a new definition of "startup" based on a number of meaningful attributes which have been neglected by more mainstream definitions.

An interesting notion introduced by this new definition of startups was the idea that these companies have to be described as economical agents moving within a dynamic framework rather than seeking a stationary equilibrium. To better explain this concept, a possible framework – called the “*Dynamicity Framework*” – describing the dynamic nature of startups was presented.

The third step in this analysis revolved around the study of startups on a Micro-economical level. In particular, we analyzed a sample of nine companies, operating in three different sectors and with three different levels of success. From this first investigation three major micro-economical indicators for startups success were identified and broken down in their fundamental units, namely: *Digital Marketing Efficiency* (DME) index, *Business Model's Strategic Integrity* (BMSI) index and *Accountability index*.

Subsequently, a study over these indicators was conducted in order to understand their efficacy and their robustness.

The last major section composing this paper has been the introduction of a model capable of defining the probabilities of success for startups.

Such model was defined by merging the results arisen from the Macro-economical analysis, the Theoretical Framework and the Micro-economical analysis. Then, we conducted an empirical application of

the model over a database counting 135 startups randomly selected from a larger pool. The model itself has been constructed in such a way that it enables the analyst to assign to a random startup a final *Rating Value* of either A, B, C or D.

Ultimately, after the empirical application of the model over our sample, we conducted a statistical study in order to analyze the results and make some considerations which, eventually, confirmed our starting hypothesis.

Thus, to conclude this paper, some further considerations need to be made, mainly with reference to the results emerged in the previous chapter (*See Sections 5.3.3 and 5.3.4*).

For instance, a major outcome of this thesis has been the empirical demonstration of the critical influence that exogenous factors exert on the level of performance of startups. The presence of a positive environment, as clearly shown by our sample's data, acts as a major driver when it comes to stimulating the growth of a diverse and dense startup ecosystem. Countries like the United States, Canada, China, the UK or the Netherlands, for instance, are among the realities where a wise use of incentives and policies helped the most in fostering the development of a great number of startups.

Nevertheless, quantity is not the only things that matters, especially in business.

To clarify, the idea that a high number of startups within a Country will statistically breed a generation of extremely high-performing companies through competition is far from being proven.

As a matter of fact, indeed, this study also showed a clear tendency of startups operating in environments considered as “non-optimal” of performing, on average, similarly – and sometimes even better – to their counterparts belonging to more “startup-friendly” contexts.

The idea that competition would act as fair substitute of “struggle”, which has driven policy-makers of the most startup-rich Countries towards a set of “friendly” policies, seems to be, hence, more disruptive than beneficial.

Evidence shows that the process of “natural selection”, which startups operating in less accommodating realities have – willingly or not – to go through in order to survive, is having a clear impact over the performance of such companies. While their American and European counterparts are still feeling safe under the bell-jar of favorable policies, more ravenous Indian, Chinese, Brazilian and Israelite startups – to mention a few – are slowly but steadily outrunning them in terms of performances.

While a huge divide between the former’s current success and the latter’s capped potential is still represented by Macroeconomic factors, there are strong signals showing that this is not going to last.

The main reasons lying behind this trend can be identified by analyzing a typical case-study situation which resembles a number of real-life situations.

If we take, for instance, an Indian startup and an American one, competing for the same market, the latter will often have a much better environment surrounding it, resulting in a clear advantage. Thus, the only way the former could compete, with all other variables equal, is by closing the gap created by all the exogenous variables by improving its endogenous ones, a.k.a its performance. Meaning that while the US company will still have room to improve but will find no real threat pushing it to do so, the Indian one will be forced towards a constant improvement in order to survive. This would make no real difference in a situation where geographic markets are disconnected and the division between emerging Countries and Developed ones is still huge, but this is no-longer the case.

With globalization quickly taking over and new technologies breaking down barriers at a tremendous pace, companies and policy makers should understand that the time of complacency is going to be over soon, and that the only way to avoid getting steamrolled is to go back to a system based on healthy competition, where only the fittest survive.

APPENDIX

1. FERMI'S THEOREM

The Fermi's Theorem (a.k.a. Fermi's Paradox) revolves around the dissonance between the concepts of scale and probability.

Such theorem represents an estimation problem designed to teach dimensional analysis and approximation techniques.

This method is pretty straightforward: if someone needs to make an esteem over a specific phenomenon about which he has no reliable data (or no data at all), a close-enough answer can be reached by using probability to esteem the scale of those factors concurring to the magnitude of the phenomenon in analysis.

This estimation technique is named after the physicist Enrico Fermi as he was known for his ability to make good approximate calculations with little or no actual data.

Fermi problems, thus, typically involve making justified guesses about quantities and their variance or lower and upper bounds.

This theorem became extremely popular when it was adopted to make an esteem over the number of intelligent species living in the universe.

i.e.:

There are an estimated 200–400 billion stars in the Milky Way ($2 - 4 \times 10^{11}$) and 70 sextillions (7×10^{22}) in the observable universe. Even if intelligent life occurs on only a minuscule percentage of planets around these stars, there might still be a great number of present civilizations, and if the percentage were high enough it would produce a significant number of extant civilizations in the Milky Way. This assumes the mediocrity principle, by which the Earth is a typical planet.

The great dilemma surrounding the Fermi theorem is the argument of probability: given intelligent life's ability to overcome scarcity, and its tendency to colonize new habitats, it seems possible that at least some civilizations would be technologically advanced, seek out new resources in space, and colonize their own star system and, subsequently, surrounding star systems. Since there is no significant evidence on Earth, or elsewhere in the known universe of other intelligent life after 13.8 billion years of the universe's history, there is a conflict requiring a resolution (this is why the theorem is called Fermi Paradox).

The theorem has been adopted in the beginning of this thesis in order to produce a reasonable esteem about the number of existing startups.

Nevertheless, it has to be clarified that such method may result extremely discontinuous; in particular, the correctness of the esteem

almost entirely depends on the subjective ability to make good approximate calculations with little or no data available.

2. STANDARD DEVIATION

In order to normalize the dataset obtained from different sources, the impact of the standard errors differentiating data belonging to one source from those belonging to another one had to be minimized.

What resulted from the analysis of the different sources was a standard discrepancy from one another, which led to an inconsistent dataset which was pretty much impossible to work with.

To overcome this mathematical issue, the following procedure was adopted:

1. Starting Situation:

We had data about the number of startups in a Country belonging to eight different sources; five of those sources already presented data allocated by Country while three of them contained Macro-economical data referring to a geographical Region.

Macro-data were allocated to the Countries belonging to the specific Region in analysis through a proxy called “ α_C^R ” (See Section 3.2).

2. Sample Variance:

In order to normalize the dataset, the Variance regarding data of each Country was computed as follows:

$$S^2 = \frac{\sum_{i=1}^8 (X_i - \bar{X})^2}{n - 1}$$

With “ S^2 ” the sample variance (Variance of the number of startups belonging to a Country referred to the measurements obtained by 8 different sources); “ X_i ” the number of startups in the Country in analysis from the Source “ i ”; “ \bar{X} ” the average number of startups in the Country in analysis; and “ n ” the number of sources in analysis for each Country.

3. Standard Deviation:

Lastly, we computed the Standard Deviation (SD) of each Variance in order to use this last data as part of our measurement; we computed the SD as follows:

$$SD = \sqrt{\frac{\sum_{i=1}^8 (X_i - \bar{X})^2}{n - 1}} = S$$

By adding the measurement of the Standard Deviation relative to the data in analysis, we were able to obtain more accurate data which resulted in increased robustness of the model.

3. HOW STARTUPS IMPROVE ECONOMY

While the major startup ecosystems are based in the developed Countries, for some aspects the rest of the world might be more interesting to follow. For instance, Indian Government has recently recognized that the startup ecosystem acted as a proxy for growing the economy.

Particularly interesting appear the collaborations which often born between startups and other major firms. Namely, IKEA is starting its own start-up accelerator program called "Co-creating a better everyday life." IKEA Boot camp, together with Danish

entrepreneurship organization Rainmaking, is currently recruiting teams for autumn 2017 that can solve the “Big Problems”. The company, as the largest furniture retailer in Europe, recognizes the opportunity of making the world better while leading the own business processes forward. As a part of the program, IKEA sets a goal of innovating the approaches by world demands: affordability, circularity, and accessibility. Start-ups have a liberty of bringing new wave for anything from virtual reality applications to food innovation, or drone-based logistics.

They think that the essence of startups is at the core of the “creative economy”. While most new fast-growing businesses are tech oriented, they create a new business system with reinvented business processes and, in general, the thinking process in business. In creative economy, people get to innovate, experiment, test, collaborate and rely on the scientific approach. According to the 2016 EY report, cultural and creative industries created almost 29.5 million jobs worldwide in 2013.

The market size is going to grow exponentially in the future as white- and blue- collar jobs are substituted with automation and robotics. If this scenario is true, startups are going to play their role at both ends: as the innovators of new business models and automation processes, and as generators of new types of entertainment and virtual world.

As said, in a knowledge-based society innovation becomes the driving force of the economy on all levels and in all types of organizations. Due to the presence of high risks when introducing new products and services, innovations are usually commercialized via isolated agents such as startup companies.

Eric Ries, the creator of the Lean Startup methodology, defines a startup as company which is newly formed, with its purpose being to develop new – usually innovative – products or services in uncertain circumstances. If a company satisfies a new need, present in a wide area or even globally, it also has tremendous growth potential. Startup entrepreneurship, thus, becomes crucial in terms of innovation, new jobs and competitiveness. A recurrent feature of these companies, for instance, is that they often test different possible business models in order to find the best-fitting one. But, in order to do so, they need a suitably-developed startup ecosystem to work with .

With reference to job creation, a Global Entrepreneurship Monitor research – GEM (2015) – showed that, worldwide, an entrepreneur with “high-potential” creates – on average – as much as 3 times more jobs than an entrepreneur with “average-potential”, and as much as 15 times more jobs than an entrepreneur with “low-potential”. Despite only 4% of all entrepreneurs can be placed in the

group of dynamic companies that have the potential to grow on global markets (on average they reach at least a 20% annual income growth), evidence shows that they truly contribute to the economic development of society, creating as much as 38% of all jobs.

In addition, 6% of entrepreneurs can be allocated as those with “average-potential” – amongst which are also counted those who achieve between 5% and 20% average annual income growth – and they create 28% of all jobs. However, the great majority of entrepreneurs have “low-potential” (90% of all), to this group is thus attributable the creation of 34 % of new jobs.

According to these data, growth is mostly generated by highly ambitious entrepreneurs who find and realize promising business opportunities. Their companies grow quickly and greatly help in increasing the employment rate. Yet another research by the Global Entrepreneurship Monitor South Africa (2012) states that one third of dynamics of countries’ economic growth can be attributed to the dynamics of startup entrepreneurship. They are also thought to contribute to the promotion of the research and innovation fostering values of proactivity into the society.

Since the crucial role of entrepreneurial talents with high potential is essential to a Country’s economic development, but these individuals are very scarce, they should be fully supported.

To summarize, there are five main reasons to implement some policies to boost startup ecosystems:

(i) Innovations

Startups are the main driving force behind economic development and the increase of productiveness in a knowledge-based society. These companies are the most suitable form of institutions for the implementation of inventions and, consequently, the best mechanism for commercializing technological and other novelties. Startup companies contribute to a quick development of new technologies and the location where they operate. Large companies often buy-off startup companies because of technology (fundamental ingredient) that they then integrate into their business and thus keep their competitive advantage. At the same time, they provide knowledge as well as spin-off and spin-out companies to the startup environment, which wouldn't be possible without a well-functioning startup ecosystem.

(ii) New jobs and economic growth

In the long term, startup companies create a large portion of new jobs and contribute to the country's overall economic growth. Considering that startup companies are based on innovations, the potential of startup companies represents the healthy core of the

economy. If a Country wishes to encourage new employment in the long term, it appears thus necessary to invest into the segment of companies that create the most jobs in the long run.

(iii) Competitiveness

Startup companies are, hence, the most dynamic economic organizations on the market, since they provide additional dynamics and competitiveness to the overall economic system. This means that the economy stays healthy, vital and diligent, while individual companies find it harder to fall asleep on their laurels.

(iv) Promoting research and innovation

High-tech as well as knowledge-based startups are very closely connected to knowledge-providing institutions. An appropriate entrepreneurship ecosystem, thus promotes the research & development as well as research & innovation approach of knowledge institutions, companies and connecting institutions while it also contributes to the applicative orientation of research work at universities and research institutions. Meanwhile, it also works as a role model and encourages students and researchers to implement their ideas via a startup company.

(v) Values

Startup entrepreneurship, lastly, changes the values within society and fosters a new mind-set in line based on knowledge and creativeness. Thus, populations will be helped to increasingly realize that they have a responsibility for their work and career development, increasing overall satisfaction on the long-run.

4. MEASURING TECHNOLOGICAL INNOVATION

Clarified that some things are intrinsically easier to measure than others, it appears clear that strategic objectives, especially those referring to firm's internal processes and growth perspectives, have been historically more problematic to outline.

Among these measurements, the degree of technological innovation appears to be one of the most complex ones to quantify.

To understand how to measure this metric, thus, it is essential to, firstly, define the phenomenon on a general level: what is meant by "Innovation"?

For the purpose of this paper, innovation is defined as the process of ideation, evaluation, selection, development, and implementation of new or improved products, services, or programs. In particular, the degree of innovation can be broken-down into four different measurements:

1. Increased number of new ideas;
2. Improved quality of ideas;
3. More efficient implementation of quality ideas;
4. Improved resultant success achieved from the implementation of new ideas;

In order to properly define and measure the degree of innovation, we have to understand which of these measures have the strongest correlation or contribution to the intended results.

A performance indicator that captures the four intended metrics listed above is the Return on Product Development Expense (RoPDE).

RoPDE is a complete KPI which is normally used for measuring the performance of product/service innovation and development. To establish meaningful RoPDE's thresholds, a comparison needs to be made between its value and other profitability metrics such as Operating Income Margin, EBIT or EBITDA.

On an enterprise balanced scorecard, “Product/Service Innovation” would, thus, be measured through an aggregate version of RoPDE, plotted by fiscal periods and compared to an acceptable range of Operating Income Margin of a 10th-percentile.

RoPDE is calculated as follows:

$$RoPDE = \frac{(GM - PDE)}{PDE}$$

Where “*GM*” is Gross Margin, and “*PDE*” is Product Development Expense.

“*GM*” may also be called gross profit, determined by subtracting cost of all sales from revenues.

“*PDE*” will typically include the engineering, technician, product marketing and associated management labor expense, fully burdened.

The design and implementation of performance measures can be a major challenge to the implementation of strategic management frameworks. As we have seen, the most important step is to define the intended results for organization’s innovation-based objectives. By doing so, product/service innovation can be measured by a single and comprehensive indicator

Thus, RoPDE appears a powerful measure for startups to consider, in that it can scale from project to product line and also be implemented in more Macroeconomic studies as a measurement at a Country-level.

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