



UNIVERSIDADE CATÓLICA PORTUGUESA

# What is a Startup?

## A Scoping Review on How the Literature Defines Startup

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Católica Porto Business School

Março 2019



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## A Scoping Review on How the Literature Defines Startup

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## Resumo

É um facto que a tecnologia está a evoluir e as startup a florescer. Mas... o que é uma startup? O que a define? Nos dias que correm, diferentes conceitos para startup são descritos por diferentes peritos e media, mas não há uma compreensão consensual (e conseqüentemente não há uma definição clara) para startup.

Neste estudo, através da base de dados EBSCO, são vistos e analisados jornais académicos Americanos de modo a descobrir mais sobre definições de startup, critérios de classificação e outras informações, como a localização geográfica e campos de estudo de diferentes artigos.

Os resultados deste estudo revelam que os Estados Unidos lideram em número de artigos relacionados com startup e que os campos de estudo se encontram principalmente em volta de política/lei e gestão/negócio. Para além desta informação, as definições de startup recolhidas neste estudo destacam o foco dado por autores à inovação, mas deixam de parte o fator da cultura/mentalidade.

**Palavras-chave:** startup, literatura, inovação.

## ABSTRACT

It's a fact that technology is booming and startup businesses are flourishing. But... what is a startup? What defines it? These days, different concepts for startup are being described by different experts and media, but there is not a consensual understanding (and consequentially not a clear definition) for it.

In this study, through the EBSCO database, we reviewed and analyzed American academic journals to learn about startup definitions, classification criteria and other information, such as the geographic location and fields of expertise of different articles.

The findings of this study reveal that the United States clearly leads in number of submitted startup related articles and that the fields of study revolve mainly around politics/law and management/business. In addition, the startup definitions collected in this study highlight the focus given by authors to the innovation factor, but leave aside the culture/mindset factor.

**Keywords:** startup, literature, innovation.

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## INTRODUCTION

The concept of startup has been around for quite a while now, but there are still doubts and unanswered questions about it and even the most basic questions generate confusion. In fact, let's think about the most fundamental question of all: what is a startup? Should it be defined by a measure of innovation? Should it be defined by size? Or should culture or mindset define it? According to Robehmed (2013), considering the differences in revenues, profits, or number of employees across companies and industries, there are no specific rules to define a startup. The same article, however, presents testimonials from CEOs, whose idea of startup is more related to innovation achievements and a specific state of mind, rather than other attributes, such as the ones previously mentioned. Nonetheless, the author identifies as a key attribute for a startup, its ability to grow. In fact, this can be seen as a way to differentiate a startup from a small business. Another interesting topic discussed is the connection between startups and technology. Even though startups are often tech-oriented, this does not define one, as a company does not need to be technology-based to be considered a startup (Robehmed, 2013).

Today, despite the inexistence of a unanimous concept, some progress has already been made. The Italian legislation recognized as one of the "most internationally advanced for innovative business support strategies" (Ministero Dello Sviluppo Economico, 2016, p. 7), defines *innovative startup* as "a new innovative enterprise of a high technological value" (Italian Ministry of Economic Development, 2016, p. 3). This definition combines innovation/technology with startup business, proving the strong link between these two themes. Italy started to show interest in developing some boundaries for this discussion, and in fact, it is in the countries' best interest to invest on this type of business, due to the economic push that it may carry. Startups usually benefit when installed in ecosystems (business clusters) due to higher

productivity. Silicon Valley, in California, is a well-known example. Wickham and Vecchi (2009) state that industrial clusters are perceived as a crucial factor for economic growth and that “the economic dynamism of clusters was always seen as also involving their responsiveness to global trends and opportunities” (p. 246). When working close to their peers, people know each other, conversations start, knowledge flows and doors get opened. Initial Public Offering (IPO) exits are another interesting topic about startups. Exits occur when companies go public, i.e., when founders and/or investors put their shares on sale for the public. A recent case of a startup exit happened with the Portuguese company Farfetch which went public on the New York Stock Exchange (NYSE) on September 2018, with a price per share of \$20, exceeding expectations according to Danziger (Danziger, 2018). Exits bring a new (and usually better) financial context to the startup, which will give the means to invest in entrepreneurial projects or start new ones. This flow of investment stirs the economy, which in turn create more investment, and so on.

Although it may seem that articles and countries’ legal systems are already discussing and defining what a startup may be, most specifically innovative startups, it is not clear how the concept is defined in the academic literature. The research presented in this study digs further into this gap and clarifies the state of the art on how the academic literature defines a startup. This study is organized as follows:

- First, a theoretical framework will introduce the startup topic. The starting section will focus on Schumpeter’s economics, followed by an analysis of technological “booms”, crises, and support programs for startups, and a third and final section that focus on the specifics of the word “startup” and its trends.
- Afterwards, the method used to conduct this scoping review is presented.

- The results obtained are presented next, followed by a discussion section. The results section is divided into four subsections: regions, results countdown, fields of study, and startup definitions.
- At the end, a conclusion of the scoping review is presented, with opinions from the author and the limitations of the study, which opens doors to further research on this engaging subject.

## THEORETICAL FRAMEWORK

In this section, the discussion about the definition of startup, started in the Introduction section of this study, is being explored further considering how innovation, technology and history have influenced this theme, as well as how the startup business is seen nowadays.

### Schumpeter's Economics

Regarded as one of the greatest economists of the first half of the 20<sup>th</sup> century, Joseph Alois Schumpeter gave a major contribution to Economics with his work on innovation and entrepreneurship (Śledzik, 2013). As mentioned by Śledzik (2013), Schumpeter puts innovation in the heart of economic change, particularly with the process of creative destruction. Schumpeter (2003) names *creative destruction* to the process of industrial mutation that, through the destruction of the old and the creation of the new, continuously re-shapes the economic structure from within. For Schumpeter (2003), the process of creative destruction is the soul of capitalism and without it only recurrent imitation exists, which is not capitalism anymore (Śledzik, 2013). Schumpeter realizes the importance of the entrepreneur, who he calls an intelligent and determined being. The reason is that the invention, by itself, does not create a major economic impact if not implemented and the economist sees the entrepreneur as the person with the influence to do so (Śledzik, 2013). Worth to mention that initially Schumpeter has seen the entrepreneur as an individual person and later on opened the possibility of being a collective entity. Schumpeter also argues that the diffusion of an invention has a greater influence on the economy than the invention itself. The argument is that the diffusion happens due to the profit potential perceived by others who start to invest in the technology needed by the invention (Śledzik, 2013). Śledzik (2013) summarizes Schumpeter ideas, saying that innovation carries the process of creative destruction that disrupts the economy and that the

entrepreneur performs the role of man of action – “entrepreneurship is innovation” (p. 91).

In a post-crisis period, are entrepreneurs the best solution? Technology has always been evolving and innovating society, around and beyond. During the Digital Revolution, new technological breakthroughs made several inventions obsolete, such as fax machines or telegrams (Pariona, 2017). This seems to make perfect sense in the light of Schumpeter’s creative destruction theory. In a capitalist society, these ideas brought by Schumpeter more than half a century ago are still “alive and kicking” (Hospers, 2005, p. 34), and his ideas of innovation and entrepreneurship might just be what the world is seeing with startups.

### Technological “Boom”, Crises, and Support Programs

In recent years, the concept of startup has been a hot topic of discussion, mainly due to its connection with new findings and uses of technology. This happens because startups tend to be tech-oriented, being their products usually easily reproduced software (Čalopa, Horvat, & Lalic, 2014). Considering this apparent relation, let’s take a look at the history and see how technology has been evolving and spreading, through a few checkpoints mentioned by Pariona (2017) in her article regarding the Digital Revolution. According to the author, by the 50’s and 60’s, computers were already being used by governments, military forces, and other organizations. Continuing to the 70’s, Pariona highlights the rise of computers for personal use within families, and in the 80’s computers were introduced in the making of films, robots started to be used in different industries, and ATMs were made available in many banks. The 90’s brought the digital mobile phones and the availability of the internet to the public, with many businesses having a website and nearly every country on earth having a connection by the end of the decade. In the beginning of the 21<sup>st</sup> century, mobile phones were a common object, and high-definition televisions replaced analog ones (Pariona, 2017).

Since a connection between technology and startups is often established, how did startups evolve during this technological “boom”? Applying the following criteria on Google Books Ngram Viewer (a tool that graphically displays how, over a period of time, keywords or phrases occurred in the corpus of books (Google, 2013)):

- Search terms: *startup* and *start-up*<sup>1</sup>;
- Timeline: 1800 to 2008 (maximum timeframe available);
- Corpus: English;
- Smoothing: 3;

The outcome was the one shown on Figure 1.



**Figure 1.**

How the words *startup* and *start-up* have occurred (%) in a corpus of books (1800-2008). From Google Books Ngram Viewer. Retrieved from [https://books.google.com/ngrams/graph?content=startup%2Cstart-up&year\\_start=1800&year\\_end=2018&corpus=15&smoothing=3&share=&direct\\_url=t1%3B%2Cstartup%3B%2Cc0%3B.t1%3B%2Cstart%20-%20up%3B%2Cc0](https://books.google.com/ngrams/graph?content=startup%2Cstart-up&year_start=1800&year_end=2018&corpus=15&smoothing=3&share=&direct_url=t1%3B%2Cstartup%3B%2Cc0%3B.t1%3B%2Cstart%20-%20up%3B%2Cc0). Copyright 2018 by Google.

SOURCE: Google Books Ngram Viewer, 2018

<sup>1</sup> The typing form *start up* was not used in this search, given the diverse use that it can have, which may not even be related to startup topics.

Despite very little appearance from 1800 until the 40's, the graphic show a significant rise from around 1950 until 2000, showing that the growth in the use of the word startup/start-up followed the period of the Digital Revolution mentioned by Pariona, above. This seems a relevant correlation between the use of the word *startup* and the history of technology development.

Focusing on the transition from the 20<sup>th</sup> to the 21<sup>st</sup> century, during the second half of the 90's, an impactful event was imminent. In this period, "internet-based stocks dominated the equity markets, and there was heavy investment in the internet and technology-based start-ups with extremely optimistic expectations" (Ranganathan, Kivelä, & Kanninen, 2018, p. 3). However, with money from investors going to technology-based startups, the price of shares raised high, and, in early 2000, investments in these companies reduced drastically, leading many of these companies, which were expected to generate profits, to failure, and, consequently, to the burst of what was called the Dot-com Bubble (Ranganathan et al., 2018).

A few years after this tech-based economic tumble, another crisis arrived. Considered one of the most brutal economic crises in history, the world was hit by the 2008 Financial Crisis. The International Monetary Fund (2008) published, on the World Economic Outlook, that the financial market crisis that erupted in August 2007 became the "largest financial shock since the Great Depression, inflicting heavy damage on markets and institutions at the core of the financial system" (p. 4). During the first half of 2007, in the United States, despite the appearance of signs of trouble, the subprime housing finance market seemed to be a crisis of limited scope (Didier, Love, & Peria, 2012). But, as the authors refer, with the collapse of Lehman Brothers in September 2008, the crisis spread rapidly across institutions, markets, and borders. This had many implications across nations, with the crisis spreading overseas, to Europe, causing fast increase in unemployment rate, deceleration of growth, and economic contraction (Poposka

& Mihajloska, 2016). Even though entrepreneurs and their startup businesses could be seen as a way to fight this environment, the economic contraction caused difficulties when finding investment for startups with no payment history, significant collateral, or proof of profitability (Poposka & Mihajloska, 2016). During the past decades, venture capital investments in the United States, measured by amount and number of deals, reached the peak in 2000, declining meaningfully in the subsequent 3 years, rebounding slowly from 2004 to 2007, to be dropped again in 2008, due to the economic crisis, and slowly recovered in the next years (Ning, Wang, & Yu, 2014). This goes along with the Crisis Hypothesis mentioned in the same work of Ning et al. (2014), that states that significant economic changes, such as the ones created by the two crises mentioned before, impact the investment preferences and strategies of venture capitalists.

Given economic setbacks, and even the usual needs startups have in a healthy economy, support programs for these companies are nowadays very common, and a vital way for many to get the resources they need to develop and share their ideas. A clear example is Andreessen Horowitz (also known as A16Z), a venture capital firm founded in 2009 in Silicon Valley. The firm invests “in seed to late-stage companies, and both consumer and enterprise technology companies. To date, a16z has raised \$7.1B, across seven funds, including the \$650M Bio funds” (Andreessen Horowitz, 2019, About, para. 1). In its portfolio, the firm has companies such as Airbnb, Facebook and Twitter. Looking at an example of an European country, in 2016, the Ministry of Economy of Portugal launched the National Strategy for Entrepreneurship, called StartUP Portugal, aiming to expand entrepreneurship activity across the country and to all sectors (IAPMEI, 2018). Another case is the internationally recognized *Beta-i*, an organization that helps “new and established businesses grow, by offering 360° innovation services with 6 main areas: Acceleration, Events, Corporate (Innovation & Open Innovation), Education, Investment and Hub” (Beta-i, 2018,

Building the innovation ecosystem, para. 1). Unfortunately, only a very small percentage of companies get help. Accelerators such as Y Combinator and TechStars, only take about 2% and 1%, respectively, of the applications received (Oleksii Shevchenko, 2018), which shows very high standard requirements.

In summary, the startup theme is evolving and technology advances are promoting that evolution. However, crises and daily struggles create difficulties for startups to flourish. In this context, programs offered by A16Z, Beta-i, and similar companies, establish easier paths for startups and entrepreneurs, but usually, only a very small number of applicants are funded. A well-defined startup concept, with specific criteria and parameters, could rise the percentage of funded startups as it would minimize the time wasted analyzing companies given that, with more specific information, some would stand out from the average and get investors very interested and some would not even apply to these programs due to lack of requirements.

### The Word and Trends

Conceptually, the word *startup* is confusing. It is seen as a “controversial term” (George, 2016, p. 4) and browsing the internet for this term reveals many definitions but not a consensual one (Renderforest, 2017). According to the dictionary Merriam-Webster (2018), the first known use of the word start-up was in 1845, as the “act or an instance of setting in operation or motion” (Merriam-Webster, 2018, Definition of start-up, para. 1). Around 130 years later, it arrived to the media with Forbes. On August 1976, Forbes published an article mentioning the word startup, and one year later, in 1977, Business Week publishes a different article also mentioning the word startup (Bellavista, 2018).

Nowadays, several tools are available that allow us to make some interesting analysis. Using Google Trends, it is possible to evaluate the popularity of a word

based on searches made by the general population. For this analysis, the following criteria were applied:

- Search terms: *startup* and *start-up*;
- Location: worldwide;
- Timeline: from 2004 until the present (2019) (unfortunately there are no results from before 2004)
- Categories: all;
- Search: Google Web.

The results obtained are shown in Figure 2.



**Figure 2.**

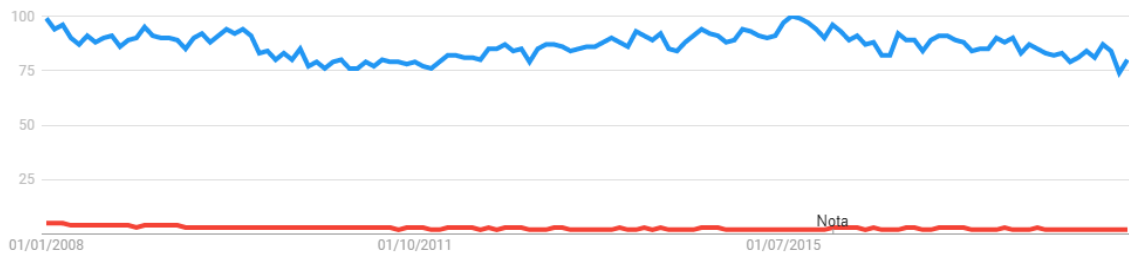
Search popularity of the words *startup* and *start-up* (January 2004 to January 2019, Google Web option) (the value 100 is the popularity peak and the value 0 means no sufficient data for the term). From *Google Trends*. Retrieved from <https://trends.google.pt/trends/explore?date=all&q=startup,start-up>. Copyright 2019 by Google.

SOURCE: Google Trends, 2019

Based on the data presented in Figure 2, besides the fact that *start-up* is barely used, one thing is immediately noticed. Searches for *startup* had its peak in 2004 and suffered a significant decrease from that point on. In recent years, it is visible a slightly increase and decrease, but nothing too relevant.

A look at Google News search options (instead of Google Web) may bring another interesting perspective. Since no data from before 2008 was available for Google News, a graphic for the option Google Web from 2008 onwards also is

shown, to be easier to compare both. Figure 3 represents the Google Web search and Figure 4 the Google News search.

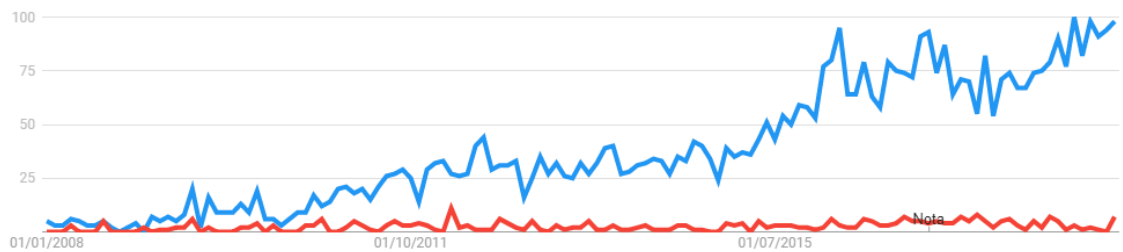


**Figure 3.**

Search popularity of the words startup and start-up (January 2008 to January 2019, Google Web option). From *Google Trends*. Retrieved from <https://trends.google.pt/trends/explore?date=2008-01-01%202019-02-03&q=startup,start-up>.

Copyright 2019 by Google.

SOURCE: Google Trends, 2019



**Figure 4.**

Search popularity of the words startup and start-up (January 2008 to January 2019, Goggle News option). From *Google Trends*. Retrieved from [https://trends.google.pt/trends/explore?date=all\\_2008&gprop=news&q=startup,start-up](https://trends.google.pt/trends/explore?date=all_2008&gprop=news&q=startup,start-up).

Copyright 2019 by Google.

SOURCE: Google Trends, 2019

Values obtained from Google News and Google Web are significantly different. In fact, despite the word *start-up*, which remains irrelevant in the results, *startup* has been increasing in Google News search, unlike the steady numbers shown with the Google Web option. The startup theme seems to be growing on the media. Why? Is technology experiencing a significant advance? Is the world living an entrepreneurial phase (more than usual)?

In the Global Entrepreneurship Monitor Global Report of 2017/2018, Global Entrepreneurship Research Association’s chairman, Hernán Cheyre, points out the global trend that has been striking society for the past decades, referring to the growing of entrepreneurship activities around the world (Global Entrepreneurship Research Association, 2018). Additionally, he mentions that the decision of start a new business has been increasingly more associated to opportunity rather than necessity. The report also explains that, as motivation for early-stage entrepreneurial activity, 74% of respondents said they had chosen to pursue an opportunity as a basis for their entrepreneurial motivation. The same study uses an interesting indicator, the total early-stage entrepreneurial activity (TEA), which refers to the percentage of adults who have started or are running a business up to 3.5 years. The report shows the following percentages per region:

Region	Total early-stage entrepreneurial activity (TEA)
North America	82.6%
Europe	75.4%
Asia and Oceania	74.4%
Latin America and the Caribbean	71.7%
Africa	70.9%

**Table 1.**

Regional opportunity motivational levels (% TEA).

The Ewing Marion Kauffman Foundation published, in its 2017 Kauffman Index of Startup Activity, a Startup Activity Index, focused on the “beginnings of entrepreneurship, specifically new business creation, market opportunity, and startup density”, from 1996 to 2016 (Fairlie, Morelix, & Tareque, 2017, p. 8). The lowest value for this index appeared in 2013, recovering since then. The report

explains that this recover is mostly due to more people entering entrepreneurship out of choice rather than necessity, corroborating with the Global Entrepreneurship Monitor Global Report of 2017/2018.

In summary, the economic view of Schumpeter brought new insights on innovation, which throughout history came in all sorts of technology, as seen during the Digital Revolution. After the technological “boom” of this revolution, and between periods of stability and crises, startup talks started to increase across the media. Definitions from the inside and outside of this startup world are given, sometimes with matching perspectives, sometimes with different ideas. The study here presented looks at literature from 2008 to 2018 to find how *startup* is being defined by academic authors. Given the information collected so far, it is expected to see, particularly, startup definitions related to innovation and technology, and to the culture and mindset of a company. The next section (Method) explains in detail the way this study was conducted.

## METHOD

This study is a scoping review, i.e., an approach used to review literature. As authors Arksey and O'Malley put it, a scoping study tends to address a wider topic, being less likely to address very specific questions (Arksey & O'Malley, 2005).

To conduct this study, a selection criteria and search strategy were created and strategies for quality assessment, data extraction and data synthesis are here presented. This section describes these methods, used to assess the scoping review question: *How does the literature define startup?*

### Selection Criteria and Search Strategy

The current study was conducted using the EBSCO Discovery Service. Through this database, criteria options were used, aiming to restrict the number of results found, in order to simplify the research and increase focus to obtain more relevant information.

The criteria began with a selection of key words/expressions that could lead to what a startup is. During an initial research on the theme, three ways to write *startup* were found across literature: *startup*, *start-up* and *start up*. Given the differences, a search for the "right" way of writing the word was made.

An article by Bindi (2015) argues that, when spelt with a hyphen, *start-up* appears to be a compound noun, which is made up of two or more words, with hyphens generally used to clear up ambiguities. The author gives the example of the word *water-bottle*. *Water bottle* (with a space between the two words) implies that the bottle is made up of water, but if a hyphen is put between the words (*water-bottle*), then it indicates that the item *bottle* is not made up water. The same article continues, arguing that *start up* (with a space) assumes someone is starting up a business, and startups are not necessarily businesses that are being started up. The author concludes, explaining that, in the case of *start-up*, the hyphen does

not clarify any ambiguities (as it usually does), since startup is not considered to be a compound noun, “its spelling just so happens to contain ‘start’ and ‘up’, which are standalone words” (Bindi, 2015, para. 10), irrelevant to define startup.

Given the arguments found in the last study, this scoping review will address the word as *startup*. Nevertheless, the other two versions were included in one key word/expression. More three key words/expressions were used, using *startup* and other words that could lead to the definition of it. It is important to notice that, even though this study addresses the word as *startup*, other literature (or equivalent) mentioned might not address the word in the same way. The chosen key words/expressions were the following:

- *startup or start-up or start up or startups or start-ups*
- *startup definition*
- *startup concept*
- *startup business*

All words/expressions were used simultaneously and linked with the option AND among them during the research.

Only studies published from 2008 onwards were searched. This decision was made given the economic environment lived during this year, particularly after September 15, the day Lehman Brothers went bust, and the “global financial stress turned into a full-blown international emergency” (Chu, 2018, para. 2). It is the latest and one of the most impactful economic crisis in history, with Chu (2018) recalling the words of Ben Bernanke, chair of the Federal Reserve, who called this crisis as “the worst financial crisis in global history” (What happened?, para. 4). Given the global economic impact that it had, and the values presented in Figure 4, showing an increase in the use of the word *startup* since around 2008, this year was the chosen to start the research.

In the database it was selected to appear only results from academic journals and written in English, to be able to restring the results. The studies searched were all undertaken in the United States (US). This geography option was chosen since the economic crisis had its main start in the US. This area was also selected due to the highly recognized startup ecosystems in several parts of the country, such as Silicon Valley in California, Route 128 in Massachusetts, and major cities that live a startup environment, with the cases of New York, Austin or Seattle. The database gave several locations that refer to the US ("United States", "California", "Santa Clara Valley (Santa Clara County, Calif.)", "USA", "Santa Clara County (Calif.)") and all of these were explored (all done separately and by the mentioned order).

Already selected by the database, were the options "find all my search terms", "also search within the full text of the articles", "apply equivalent subjects", "full text" and "available in library collection". A "peer review" option was selected. The criteria mentioned so far will be called "Criteria 1", which refers to the criteria applied in (and already selected by) the EBSCO database.

With all these criteria applied, 412 results were found. However, it is important to mentioned that, among these, only articles with the option "PDF Full Text" or "PDF full text from Publisher" were examined. Also, when opened, some links for articles returned the description "the page you were trying to reach cannot be found" or were paid articles. Both cases were not considered. During the search, when reaching a certain article, a note appeared: "Note: Exact duplicates removed from the results". From this note on, no more articles were shown. Given this issue, the search ended. In the case of the geographic location "United States", it ended with the 242<sup>nd</sup> article, "California" with the 11<sup>th</sup>, "Santa Clara Valley (Santa Clara County, Cali.)" with the 8<sup>th</sup>, "Santa Clara County (Calif.)" with the 6<sup>th</sup>.

One last note worth giving is that, certain articles were already repeated when examining some of the location options, and, therefore, were not examined again. It is the case of “Santa Clara Valley (Santa Clara County, Cali.)” (6 articles repeated), “USA” (2 articles repeated) and “Santa Clara County (Calif.)” (6 articles repeated). In the end, 187 articles were examined (despite 188 were available according to the criteria applied, 1 was from 2007, being eliminated from the final examination). These last criteria will be called “Criteria 2”.

Table 2 shows the number of articles obtained after the respective criteria applied. Applying Criteria 1, the study found 412 articles, and with Criteria 2, 187 were found.

<b>Criteria applied</b>	<b>Number of articles</b>
Criteria 1	412
Criteria 2	187

Table 2.

Number of articles by criteria applied.

To save and manage all the studies and respective references, the reference manager Mendeley was used.

### Quality Assessment

To assure the literature found was qualified and relevant for the study here presented, all of it was searched under a “peer review” option that is provided by the EBSCO Discovery Service database. This guarantees the validation and the quality of the studies found.

### Data Extraction

Various types of data were extracted for this scoping review. First, and before applying the final criteria from Criteria 1, which was the geography option (where were chosen all the US locations), is was analyzed the number of articles per region available.

Then, since the objective of this study was, mainly, to present the readers with specific startup definitions, it was used the commands “ctrl+f” to find specific words that could lead to startup definitions in the 187 articles that result from the criteria applied. The words searched were *startup* and *start-up*. Besides the definitions found, it was also extracted from the 187 articles, the following:

- Author(s)
- Study
- Academic journal
- Year
- Area/field of study (16 were observed)
- Reference

The areas for each study were created and applied as analyzing the same, no area was created prior to the analyze of the studies. Each area corresponds to the field of the study, for instance Management/Business, Entrepreneurship or Technology, depending on the discussion of the study. A study only corresponds to one area.

The data extracted was entered in Microsoft Excel.

## Organization and Reporting of Data

After the collection of data, the same was organized to present the results in a clearer way. Using Microsoft Excel, charts and tables are presented to the reader with the findings obtained. First, is introduced an overview of the number of articles per region. Afterwards, an analysis of the fields of study of the different articles are described. To finalize the reporting of data, the results are explained.

## RESULTS

This section presents to readers the results obtained through the scoping review. The results are organized by subsections: Regions, Fields of Study, and Startup Definitions.

### Regions

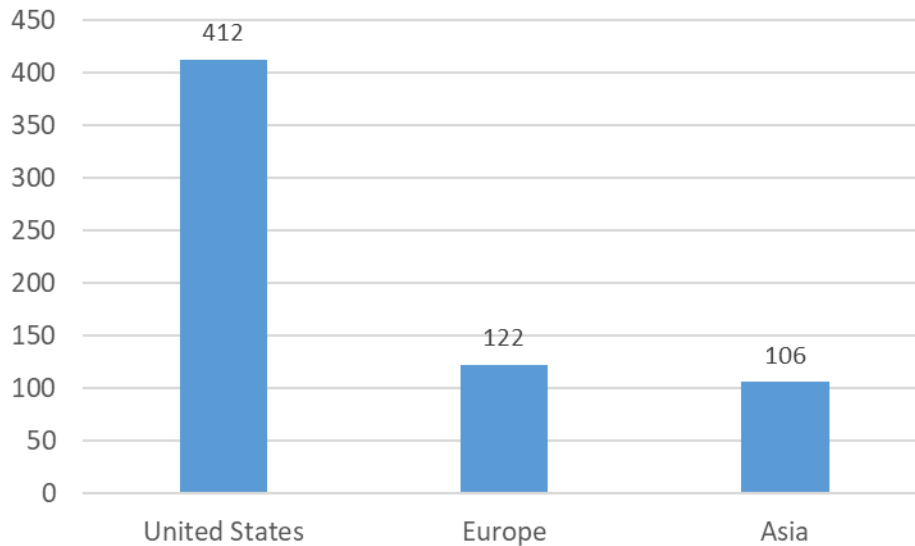
Despite the focus given by this study on the US region, the number of articles available for the different geographies were analyzed. The geography options given by EBSCO, after applying all the other criteria mentioned for the database, are seen below, with the respective numbers of articles per location.

Location	Number of articles
United States	351
China	77
Germany	46
Great Britain	44
Europe	32
India	29
California	21
Santa Clara Valley (Santa Clara County, Calif.)	15
USA	13
Santa Clara County (Calif.)	12

Table 3.

Geography options for the study.

Aggregating data about US, Europe and Asia regions, the results obtained were the following:



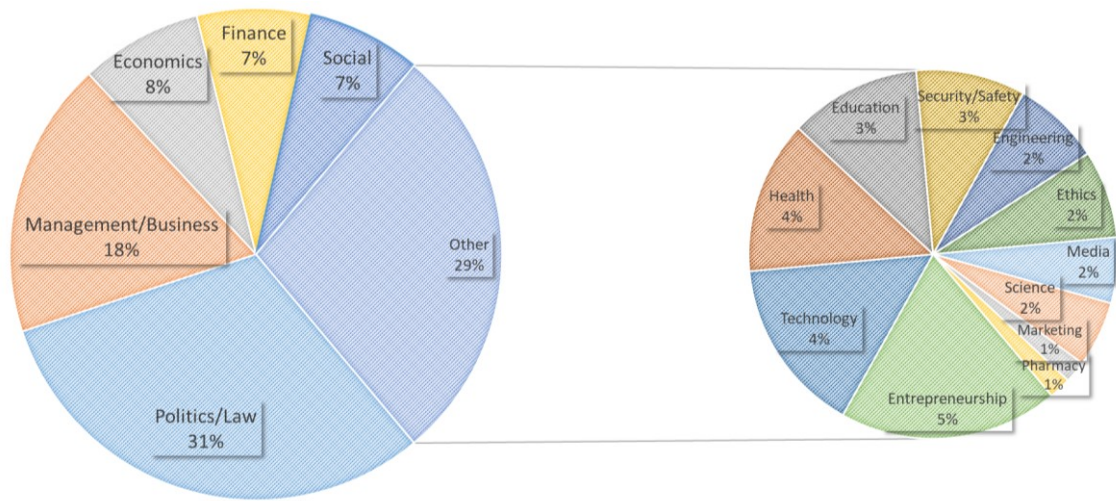
**Figure 5.**  
Articles per region.

The number of studies from the US more than triples the ones from Europe. Europe and Asia have close numbers, with Europe having only 16 articles more than Asia.

### Fields of Study

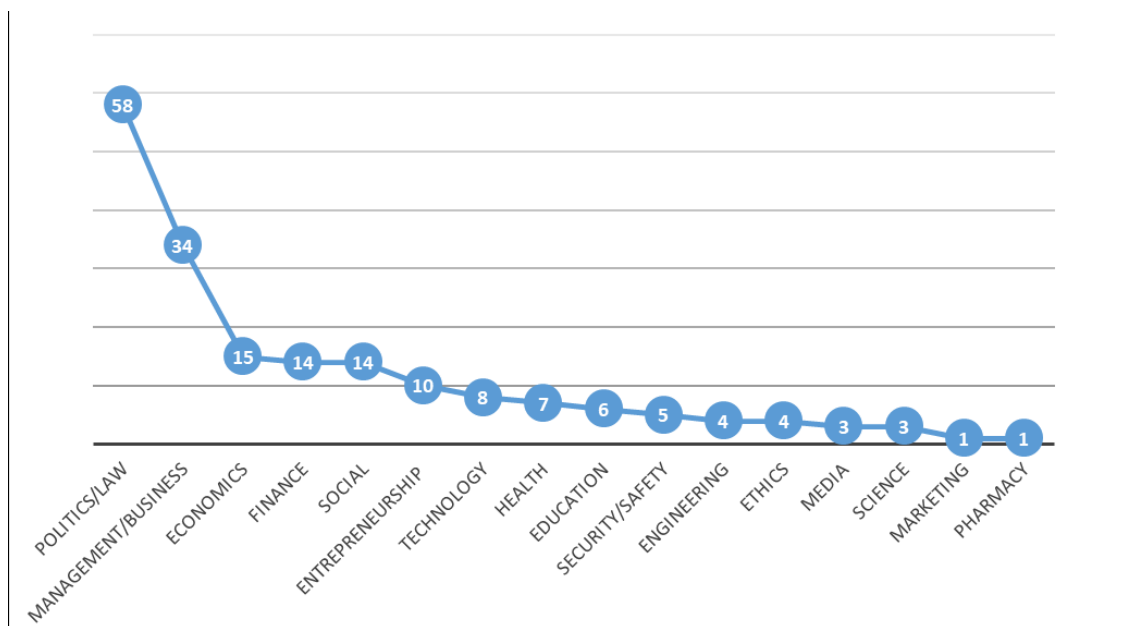
Researching the 187 articles found, the fields of study of each one were analyzed. To each article, it was assigned a specific field of study.

To be able to see what areas mention the key words/expressions used for the research is a huge advantage in order to understand how the word has been used during most recent years. The pie chart that follows reflects that exact issue. Since 16 areas were found, the “top 5” is highlighted in the bigger pie chart and the remaining 11 are represented in the smaller one.



**Figure 6.**  
Areas of study of the articles.

The following graphic reflects the numbers presented in the percentages of the pie chart.

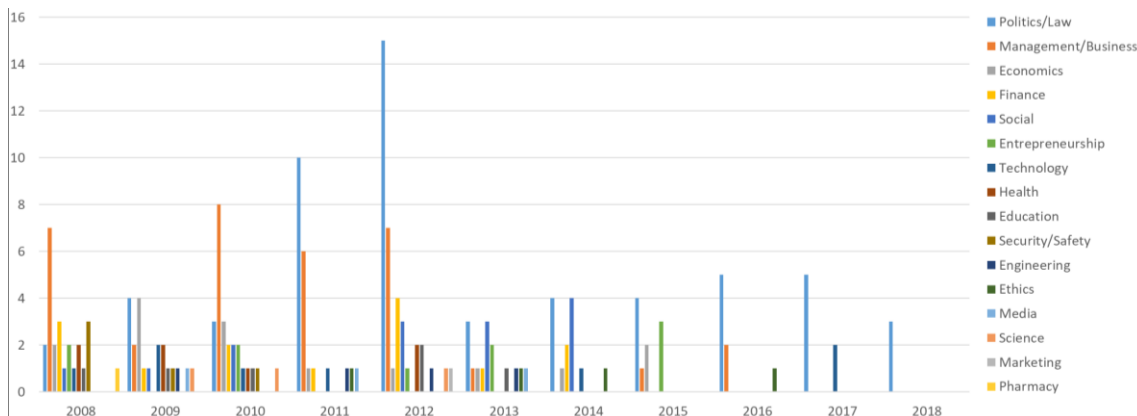


**Figure 7.**  
Number of articles per area of study.

Looking at the two graphics, it is easily seen that the “top 2” areas have a significant higher number of articles than the rest. “Management/Business” presents a value more than the double from the area presented in 3<sup>rd</sup> place, and

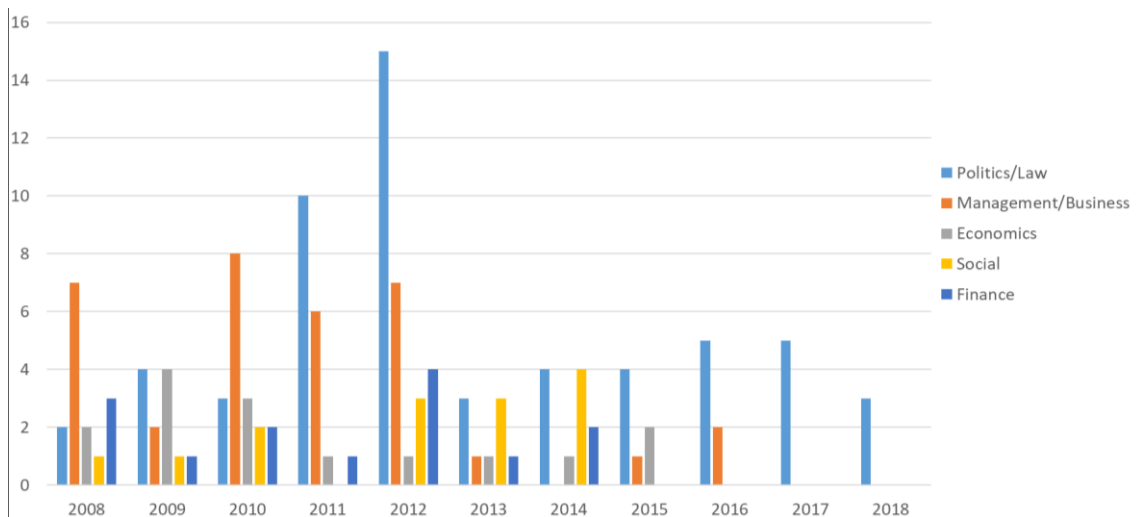
the result shown by “Politics/Law” is close to two times the value of “Management/Business”. “Marketing” and “Pharmacy” are the areas with less studies, each one with only one article.

A distribution of the number of times that each area of study appear per year was also made, being represented in the following two graphics. The first one shows all the fields of study, while the second one only shows the “top 5”.



**Figure 8.**

Areas of study of the articles per year.



**Figure 9.**

Areas of study of the articles per year - top 5.

“Politics/Law” is the only area that appears during all years of the timeline analyzed and reaches a value of 15 articles in the year of 2012 and 10 in 2011, the two higher values. “Management/Business” is represented in 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> place

in terms of highest values. It is also interesting to notice the years of 2017 and 2018, where only articles within the area of Politics and Law appeared.

## Startup Definitions

Primarily, it is important to analyze how many articles present a startup definition. The following table shows, per year, the number and percentage of articles with (and without) a definition for startup.

Startup definition	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Yes	3	1	3	4	2				2			15
No	22	20	22	18	36	15	13	10	6	7	3	172
<b>Total</b>	<b>25</b>	<b>21</b>	<b>25</b>	<b>22</b>	<b>38</b>	<b>15</b>	<b>13</b>	<b>10</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>187</b>
Percentage of "Yes"/Year	12,00%	4,76%	12,00%	18,18%	5,26%	0,00%	0,00%	0,00%	25,00%	0,00%	0,00%	8,02%

Table 4.

Articles with/without a startup definition per year.

To be easier to compare the numbers during the period of analysis (2008-2018), the following bar chart was created.

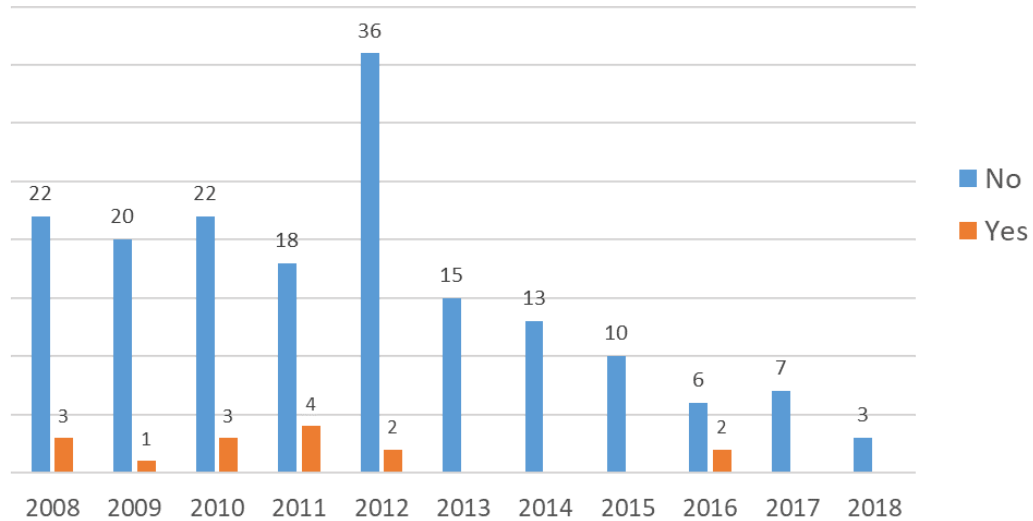


Figure 10.

Articles with/without a startup definition per year.

As graphically shown above, the great majority of articles analyzed does not have a definition for the concept of startup. In fact, only 8,02% of the articles

define the word. Of the 11 years analyzed, 5 do not present any article with a definition for the word.

Year 2008 (with 3 articles), 2010 (3) and 2011 (4) are the three years with most definitions. An obvious contrast between “Yes” and “No” can be seen when looking at the percentages.

2016 is the year with most percentage of “Yes” (25%), with the 2<sup>nd</sup> and 3<sup>rd</sup> place being attributed to 2011 (18,18%) and 2008/2010 (12%), respectively. However, it is important to notice the discrepancy between the number of articles available for analyze in each year, specially the decrease of the number of these articles after 2012.

As noticed, 15 articles were found containing startup definitions. These definitions are presented below in Table 5. It is worth to mention that, despite this study calling them definitions, some are not direct definitions given by authors, but sentences, criteria, or words, linked to startups in the studies analyzed, and concluded to be important to define one.

Nº	Author(s)	Study	Definition(s)
1.	Shapira (2008)	Putting Innovation in Place: Policy Strategies for Industrial Services, Regional Clusters, and Manufacturing SMEs in Japan and the United States	<i>High-technology venture startups that typically grab headlines and garner venture capitalists' attention by promising radical new advances.</i> (p. 69)
2.	Zhou and Peng (2008)	The entrepreneurial	<i>The route for university entrepreneurship is</i>

		<p>university in China: nonlinear paths</p>	<p><i>from lowtech entrepreneurship to capital accumulation and then to high-tech innovation or startups.</i></p> <p>(p. 645)</p>
3.	Sadeghi (2008)	<p>The births and deaths of business establishments in the United States</p>	<p><i>If rising productivity or any other factor causes startup businesses to have a smaller initial size and lower total employment in the quarter in which they debut, the use of employment created by births as a measure of economic impact may not show the true effects of births and entrepreneurship.</i></p> <p>(p. 10)</p>
4.	Zaborowski (2009)	<p>Opportunities in a recession</p>	<p><i>Venture backed startups are responsible for many of our most important innovations and highest paying jobs.</i></p>

			<p>(p. 42)</p> <p><i>While startups do create new jobs, the initial role of a startup is to draw wealth into a community. Startups do bring high salaries, but more importantly, they bring a high level of investment. High technology startups require cutting edge equipment and facilities. It is important to inform residents to expect 1-2 out of 10 companies to succeed. While they may not see an immediate benefit in terms of new jobs in the community, the economic activity stimulated by startups is a valuable investment. VC has a significant impact on</i></p>
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			<p><i>jobs and the economy, but it takes time.</i></p> <p>(p. 47)</p>
5.	<p>Chawla, Khanna, and Chen (2010)</p> <p>(Quinn &amp; Cameron, 1983)</p>	<p>Are small business critical success factors same in different countries?</p>	<p><i>Quinn and Cameron found four major stages: (One) entrepreneurial; (Two) collectivity; (Three) formalization and control; (Four) structure elaboration and adaptation. These stages may also be described as startup, rapid growth, equilibrium, and evolve or die.</i></p> <p>(p. 4)</p>
6.	<p>Quan and Motoyama (2010)</p> <p>(Burt, 1992)</p>	<p>Empirical disaggregation of social networks: A study of ethnic professional associations and entrepreneurship in Silicon Valley</p>	<p><i>In this article, we will simply focus on the start-up activities because venture creation is the direct outcome of entrepreneurs' intentions and consequent actions (Burt, 1992).</i></p>

			(p. 512)
7.	Golden (2010)  (Wadman, 2005)	WARF's stem cell patents and tensions between public and private sector approaches to research	<i>And WARF's typical fees for commercial actors — an upfront licensing fee of \$100,000 and annual maintenance fees of \$25,000 — were much higher than those for academic researchers, and commercial ventures such as biotechnology startups could not always afford to pay them.</i>  (p. 320)
8.	Balasubramanian (2011)	New plant venture performance differences among incumbent, diversifying, and entrepreneurial firms: the impact of industry learning intensity	<i>Throughout, we use the term venture to refer to any large expansion project by a new or existing firm and new plant venture to denote a new manufacturing plant started by a new or existing firm. Start-up refers to the event of</i>

			<p><i>starting the new plant venture.</i></p> <p>(p. 549-550)</p>
9.	Engel and Del-Palacio (2011)	Global clusters of innovation: The case of Israel and Silicon Valley	<p><i>In many cases, these entrepreneurs return to their home countries and employ this knowledge to capitalize opportunities there. Despite geographical distance, returning entrepreneurs maintain weak ties<sup>41</sup> with entrepreneurs and engineers, managers, suppliers, and customers in their COI of origin. New startups then are born and grow based on global strategies that connect individuals and companies in geographically distant COI.</i></p> <p>(p. 34)</p>
10.	Bonaccorsi (2011)	European competitiveness in	<p><i>The main tool for the transformation of ideas</i></p>

		information technology and long-term scientific performance	<i>into commercial innovations has been the creation and rapid growth of start-up companies.</i> (p. 538)
11.	Kogan (2011)  (Ghosh & Nanda, 2010) – 2.	Commercial high technology innovations face uncertain future amid emerging "BRICS" compulsory licensing and IT interoperability frameworks	<p><i>1. The current regulatory environment is particularly challenging for start-up companies, which have historically played a key role in driving innovation, because of their limited financial resources.</i> (p. 208)</p> <p><i>2. According to one recent Harvard Business School study, a startup company's product (e.g., biofuels) is contingent on whether it is provided a subsidy or credit.</i> (p. 211-212)</p>

			<p>3. (...) thereby placing both mature and new business (startup) (...). (p. 219)</p>
12.	<p>Shavinina (2012)  (Saxenian, 1994) – 2.</p>	<p>The Emergence of a new research direction at the intersection of talent and economy: The influence of the gifted on economy</p>	<p>1. Start-ups, being by definition at the early, critical stage of their development (the so-called “sensitive periods” in organizational development), try to attempt perfection in all aspects of their business activities. (p. 69)</p> <p>2. Generally, Silicon Valley start-ups were founded by a group of talented engineers – friends and/or former colleagues – who developed a certain deal of expertise working in other companies and who had an innovative idea, which they could</p>

			<i>not realize in their current workplace (Saxenian, 1994). (p. 76)</i>
13.	<p>Basol (2012)</p> <p>(Dubiansky, 2006) –</p> <p>1.</p> <p>(Dubiansky, 2006) –</p> <p>2.</p>	<p>Fabless semi conductor companies, the patent on sale bar, and the new america invest act</p>	<p>1. <i>The rise of the venture capital industry has led to the emergence of startup companies founded to commercialize new technologies. (p. 3)</i></p> <p>2. <i>Though less well-funded than the established players in the industry, the innovation from these startups has challenged the in house research and development model that has dominated American industry since the turn of the century. (p. 3)</i></p>
14.	<p>Anderson (2016)</p> <p>(Bessen, 2012)</p>	<p>Software, abstractness, and</p>	<p><i>James Bessen noted that from 1996 to 2006 the number of patent-</i></p>

		soft physicality requirements	<i>holding startup firms – the same firms often thought of as the champions of innovation – declined.</i> (p. 576)
15.	Xia and Roper (2016)  (O’Reilly & Tushman, 2008)	Unpacking open innovation: Absorptive capacity, exploratory and exploitative openness, and the growth of entrepreneurial biopharmaceutical firms	<i>For small high-tech start-up firms, exploitative relationships are formed to commercialize their existing technologies, and ensure their current viability by making them become more efficient in using what they already know</i> (O’Reilly and Tushman 2008). (p. 936)

**Table 5.**

Startup definitions.

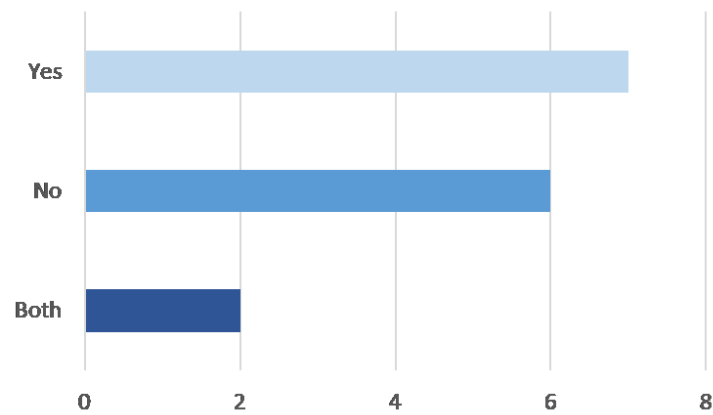
Some of the definitions presented are not originals from the authors of the studies. Below it is possible to see what studies present an original definition for *startup* and the ones who use other author(s) as references to introduce the definition.

Nº	Author(s)	Own definition?
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1.	Shapira (2008)	Yes
2.	Zhou and Peng (2008)	Yes
3.	Sadeghi (2008)	Yes
4.	Zaborowski (2009)	Yes
5.	Chawla, Khanna, and Chen (2010)	No
6.	Quan and Motoyama (2010)	No
7.	Golden (2010)	No
8.	Balasubramanian (2011)	Yes
9.	Engel and Del-Palacio (2011)	Yes
10.	Bonaccorsi (2011)	Yes
11.	Kogan (2011)	Both
12.	Shavinina (2012)	Both
13.	Basol (2012)	No
14.	Anderson (2016)	No
15.	Xia and Roper (2016)	No

**Table 6.**

Authors with/without own definition.



**Figure 11.**

Number of authors with/without own definition.

The results are relatively balanced, with 7 studies presenting an original definition, 6 with definitions from other author(s), and 2 study with both (original and from other author(s)).

A discussion of the results presented is made in the following section.

## DISCUSSION

The results of the scoping review provided insights on how the startup theme is being discussed in the literature over the past 11 years. The following discussion follows the subsections Regions, Fields of Study, and Start Definitions from the Results section.

### Regions

The numbers retrieved from the geographic options available in the EBSCO database show the clear advantage that the US have around the startup topic and/or adjacent themes. It is not unexpected to encounter high levels of studies throughout the US region, due to the history that it has on startup projects. Entrepreneurship areas, such as Silicon Valley, in California, Route 128, in Massachusetts, and so many other areas in major cities across the country, make the US an obvious place to explore the startup theme. However, it is worth noticing that the values compared are between the US and two continents, not two countries. If it was compared to countries, the results would be even more accentuated. Not even an entire continent has a third of the studies as the US in the EBSCO database. Not all the authors are Americans, but the academic journals where the studies were published are, showing the interest from foreign authors to publish in American academic journals.

### Fields of Study

From all the studies analyzed, a field of study was attributed to each one, as mentioned before. The studies that make the “top 2” were the two fields that most stood out. Management/Business was an expected topic to be on the top of the list of fields associated to startup research, for obvious reasons. Given the rise of startups across the media (as seen in Figure 4), discussions around startup management, opportunities to explore, or trends, are usual debates inside the startup community. Matthews (2018), for instance, published an online article explaining why startups need solid management, stating that startups are now

driving business. Even though it is not the first, it holds a solid place on the list. The first spot is occupied by Politics/Law, and with a large distance from the rest, particularly from the third spot (inclusive) below. When analyzing the studies included in this field, many of them were related to patent topics. This did not come as a surprise, since during initial search this theme appeared several times. Adibi (2017), a patent attorney from the San Francisco Bay Area (close to Silicon Valley), writes in his online article about the importance for a startup to get a patent, and in fact, high-tech companies, such as startups, usually want to obtain patent protection (Patel, n.d.), in order to protect their intellectual property.

Entrepreneurship, Technology, and Engineering were fields with fewer number of studies, despite being commonly associated with startups, as already discussed. These results came out, probably, due the assumption that startups are already related to these topics, with the studies analyzed tending more to the discussion of the business itself and its legal aspects, rather than the technology innovation process.

### Startup Definitions

As seen in Table 4, only 8,02% (15) of the 187 studies analyzed presented a startup definition (original, based on another author, or cited). It was not an expected result. Are authors dodging the question of what a startup is? Or do they simply assume that, in this modern world, startup is already a well-known term? The last one can be the answer. In fact, nowadays, startup is not a new word anymore. However, even though the word itself is known, as discussed before, its meaning is still not very well defined.

To better analyze and discuss the startup definitions found, six startup related criteria were created and attributed to the 15 definitions. The attribution made between studies and criteria is presented in Table 7.

Nº	Author(s)	Innovation	Lifecycle	Size	Investment	Economic Impact	Culture/Mindset
1.	Shapira (2008)	X					
2.	Zhou and Peng (2008)	X	X		X		
3.	Sadeghi (2008)	X	X			X	
4.	Zaborowski (2009)	X			X	X	
5.	Chawla, Khanna, and Chen (2010)	X					
6.	Quan and Motoyama (2010)	X					
7.	Golden (2010)	X					
8.	Balasubramanian (2011)	X	X				
9.	Engel and Del-Palacio (2011)	X				X	
10.	Bonaccorsi (2011)	X					
11.	Kogan (2011)	X	X		X		

12.	Shavinina (2012)	X	X				
13.	Basol (2012)	X			X	X	
14.	Anderson (2016)	X					
15.	Xia and Roper (2016)	X					

**Table 7.**

Startup criteria applied to each startup definition found.

Innovation is the only criteria that appears in all definitions and, for some, is the only criteria. In fact, has seen throughout the study, startups are usually associated with new ideas, technology, and innovation, which is 100% supported by data presented in Table 7.

The Lifecycle, Investment, and Economic Impact criteria were attributed to five, and four (for the last two) studies, respectively. This was not seen as unusual, given the different characteristics that different authors may want to highlight, and even the scope of the different studies. However, the Size and Culture/Mindset criteria were not expected to have the respective outcome. None of them was linked to one definition. The Size criteria did not have any expectations as far as relating it with a startup definition. Culture/Mindset, on the other hand, was expected to be related, at least, with some definitions, particularly due to the importance given to startup insiders, such as CEOs. In the already mentioned article written by Robehmed (2013), Adora Cheung, cofounder and CEO of Homejoy, says that a startup is a state of mind. In fact, the same article collects other ideas that point out in a similar direction, with Russell D'Souza saying that a startup stops being one when employees do not feel they

have impact, and Matt Salzberg noting that keeping the culture gets harder as years pass and with the arrival of new employees.

Even though no evidence of Culture/Mindset criteria was found in the startup definitions analyzed, it should not be ruled out from what makes a startup, especially when startup founders defend its importance. Their ideas seem to suggest that while the dynamic of continuously creating something new lives within a company, that company will be a startup. Also, this outcome for the Culture/Mindset criteria may be justified by studies analyzed that did not have the startup topic at its core, which could lead to more pragmatic and simple definitions.

## CONCLUSION

Startups are on the rise and today are more discussed than ever (Figure 4). It is, in fact, a thriving type of business, capable of shaping economies and change the world. However, many definitions for what a startup is are seen across the media, either through academic literature, magazines, blogs, commercials, etc. This scoping review searched, within the American academic literature, for startup definitions, to discover how the literature has been defining this engaging term.

Even though the results from the Culture/Mindset criteria were not the ones expected, the results from the Innovation criteria were. As seen throughout the study, a startup does not need to be necessarily associated with technological developments, but they usually are. Innovation is how a startup generally creates impact and changes how the world lives, works, communicate, etc., and technology normally helps creating disruptive ideas capable of such. However, these ideas only come from teams with the will have them and go forward, changing how the world sees things, which is why the Culture/Mindset criteria should also be considered an important factor when describing a startup.

From the author of this study point of view, which is based on the results obtained, as well as on all the research made for this scoping review, a startup is a company, generally associated to technology, that keeps growing, creating impact on peoples' lives.

The restrictions presented in this study pose some limitations but gives room for more research. Another database can be used to search different studies, and even using the EBSCO database, different criteria can be applied, such as geography, since this study focused mainly on US academic journals.

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