

Nomenclatures, terminologies and classification of startups: A multivocal literature review

Nomenclaturas, terminologias e classificação das startups: Uma revisão multivocal da literatura

Nomenclaturas, terminologías y clasificación de las startups: Una revisión multivocal de la literatura

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Abstract

The absence of nomenclature, terminology and classification referring to the universe of startups may lead to inconsistencies in academic research. The purpose of this article is to systematize the nomenclature and terminology of the startups universe and establish a taxonomy of their own, as well as their classification considering both the academic and market point of view. Furthermore, to propose unique terms for academic use. The study used a Multivocal Review of the Literature on startups, verifying the nomenclatures, terminologies and classifications that guide it (phases, target audience, business model), both in academic literature and in gray literature. The result allowed the presentation of information so the various existing bases on the topic could be compared. The study used its own parameters and four data sources, which represents an opportunity for future studies on the subject, exploring other data sources and research methodologies. Moreover, the term "startup" is a widely used verb in the English language, which causes a lot of misunderstandings with what was called "startup" in this article. The study aims to contribute with a standard nomenclature model in order to achieve efficient analysis of the startups business language with the purpose of assisting researchers and entrepreneurs involved. The proposed definitions constitute a reference terminology with presentation of concepts of the startups' terms, reconciling academic terminology with that used in the market in terms of target public, income model and stage.

Keywords: Startup; Nomenclature; Classification; Target public; Income model; Stage.

Resumo

A ausência de uma nomenclatura, terminologia e classificação referentes ao universo das startups pode levar à inconsistências nas pesquisas acadêmicas. O objetivo deste artigo é sistematizar a nomenclatura e a terminologia do universo das startups e estabelecer uma taxonomia destas, bem como sua classificação considerando o ponto de vista acadêmico e de mercado. Além disso, propor termos únicos para uso da academia. O estudo utilizou uma Revisão Multivocal da Literatura sobre startups verificando as nomenclaturas, terminologias e classificações que a norteiam (fases, público-alvo, modelo de negócio), tanto na literatura acadêmica, como na literatura cinza. O resultado permitiu a apresentação das informações de maneira a comparar as diversas bases existentes sobre o tema. O estudo utilizou parâmetros próprios e quatro fontes de dados, o que representa uma oportunidade para estudos futuros sobre o assunto, explorando outras fontes de dados e metodologias de pesquisa. Além disso, o termo "startup" é um verbo muito utilizado na língua inglesa o que causa muito equívoco com o que se denominou "startup" nesse artigo. O estudo visa contribuir com um modelo de nomenclatura padrão a fim de alcançar uma análise eficiente da linguagem empresarial das startups com o propósito de auxiliar pesquisadores e empreendedores envolvidos. As definições propostas constituem uma terminologia de referência com apresentação de conceitos dos termos de startups, conciliando a terminologia acadêmica com a utilizada no mercado quanto a target public, income model and stage.

Palavras-chave: Startup; Nomenclatura; Classificação; Público-alvo; Modelo de receita; Fase.

Resumen

La ausencia de una nomenclatura, terminología y clasificación referida al universo de startups puede generar inconsistencias en la investigación académica. En ese marco, el objetivo de este artículo fue sistematizar y establecer una taxonomía de la nomenclatura y terminología del universo de startups, así como su clasificación desde el punto de vista académico y de mercado. Además, proponer términos únicos para el uso de la academia. El estudio utilizó una

Revisión de Literatura Multivocal sobre startups verificando las nomenclaturas, terminologías y clasificaciones que la orientan (fases, público objetivo, modelo de negocio), tanto en la literatura académica como en la literatura gris. El resultado permitió realizar la presentación de la información con el fin de comparar las diversas bases existentes sobre el tema. El estudio utilizó sus propios parámetros y cuatro fuentes de datos, lo que representa una oportunidad para futuros estudios sobre el tema, explorando otras fuentes de datos y metodologías de investigación. Además, el término "inicio" es un verbo muy utilizado en el idioma inglés que provoca muchos malentendidos con lo que se denominó "inicio" en este artículo. El estudio tuvo como objetivo contribuir con un modelo de nomenclatura estándar para lograr un análisis eficiente del lenguaje empresarial de los startups con el propósito de ayudar a los investigadores y emprendedores involucrados. Las definiciones propuestas constituyen una terminología de referencia con presentación de conceptos de los términos de startups, conciliando la terminología académica con la utilizada en el mercado en términos de público objetivo, modelo de ingresos y escenario.

Palabras clave: Startup; Nomenclatura; Clasificación; Público-objetivo; Modelo de ingresos; Fase.

1. Introduction

The economic scenario of countries, the lack of formal jobs, causing unemployment in alarming numbers, and the support for entrepreneurship provided by governments, with incentive systems and programs, are promoting a huge interest in the concept of entrepreneurship. The information age has brought to light new markets, new forms of consumption, new ways of doing business and new types of companies (Nesello, 2019).

In this new era, studies on startups have grown rapidly in recent years, as they contribute to and accelerate the process of job creation and the economic growth of nations, which has attracted the interest of academics, professionals and policy makers (Atherton, 2004; Wong et al., 2005; Valliere and Peterson, 2009; Gries and Naudé, 2010; Hessels, et al, 2011). The term Startup, despite having been used for almost two decades, still presents many dichotomies. The use of the term startup itself lacks definition and terminology. Originating from the English verb "start" plus the preposition "up", the term clashes between verbal use with the noun commonly used in the market and in academic bases to designate a startup business. Startup also means an early stage company, but it is not necessarily a "startup" with the meaning used in this article.

Other than that, the very definition and meaning of a startup business needs a clearer definition, considering that some authors such as Alves e Duarte (2016) described startup as the initial phase of a business or the pre-operational phase, and others as businesses that can worth a fortune, the so-called unicorn startups (Reston, 2018; Rey, 2020). Some scholars describe startups as technology-based companies (Blank, 2013), others describe them as companies that do not necessarily need as much technology (Guimarães et al, 2007; Silva et al, 2009; Araújo and Castro, 2016). This lack of consensus or standardization hinders the academic and comparative work on the evolution of startups, whether at the academic or market level. The truth is that businesses, whether new or established, are created out of necessity due to the lack of formal jobs or because of an opportunity seen in the market, must seek innovation as a way of not succumbing to the challenges that arise year after year.

In the last decade, according to the study Global Startup Ecosystem Report (2020), carried out by the Genoma Start up, spending on innovation grew faster than the countries' Gross Domestic Product. The innovation discourse has become recurrent in companies, regardless of their size or segment in which they operate. Several studies highlight the importance of innovation for the development of companies and nations (Griliches, 1979; Wakelin, 2001; Parisi, Schiantarelli, & Sembenelli, 2006; Mairesse & Robin, 2009; Barrichello, 2020; Franco and Diaz, 2020).

Thus, the objective of this article is to systematize the nomenclature and terminology of the startups universe and establish its taxonomy, as well as their classification considering the academic point of view of researchers and market professionals, obtaining collective knowledge under different perspectives. In addition, to propose unique terms for academic and market use.

The study aims to contribute with a standard nomenclature model in order to achieve an efficient analysis of the startups business language with the purpose of assisting researchers and entrepreneurs involved in the context of startups'

creation and development. To this end, a Multivocal Literature Review on startups and the terminologies and classifications that guide them (phases, target audience, business model) was used.

2. Literature Review

The global economy tries to recover the speed prior to the crisis occurred in 2008-2009. Although some years were better than others, the covid_19 pandemic caused a lot of uncertainty, mainly economic, directly affecting companies due to changes in consumer spending patterns, new business generation, R&D, investment in human capital and other elements that affect the productivity in the medium and long term (Baker et al, 2020; Giones et al, 2020; Ratten, 2020). Insecurity remains high. Even so, investment and productivity growth remain worldwide, with innovation as the main driver. In this context, startups proliferate with a non-negotiable rule, that of permanently innovating.

Startups have emerged in different parts of the world and have contributed to the technological and socioeconomic development of society. The term startup was already used in the USA to refer to companies that were developing a new product or service, but it gained prominence in the Digital Era and the so-called Internet Bubble between 1996 and 2001 (Ries, 2011). From then on, startups were a group of people developing a different, innovative idea that would open up a new market or compete with the current options, however, with a more efficient and modern offer.

Startup is currently conceptualized as an organization that aims to create new products and services under a scenario of extreme uncertainty (Ries, 2011). Like Blank (2013), the founders of startups criticize the traditional approach of the business plan due to the rigidity and repetition of actions. Early stage startups invest in innovative products and business models and operate under conditions of uncertainty. This trial period is the time when entrepreneurs seek a product or service that offers potentially high returns (Baggio, 2019).

While established companies operate with well-known business models and focus on optimizing efficient operations, startups are looking for a viable value proposition and a scalable and repeatable business model (Mercandetti et al. 2017). Many companies are embarking on a digital transformation by integrating their business processes to the Internet, from inputs to after-sales, seeking full integration of the value chain, and startups are emerging to solve these issues (Schlaepfer, Koch and Merkofer 2015; Kiel, Arnold and Voigt 2017).

The global startup economy grows year after year. According to Startup Genome (2020), even with the covid_19 pandemic, startups in 2020 raised almost US \$ 3 trillion in value, a number equivalent to the GDP of a G7 economy. Startup ecosystems promote productivity around the world because startups are not only companies that generate jobs and economic growth, they also encourage innovation throughout the production chain, boosting from large corporations to small and medium-sized companies.

This innovation in the value chain generates more than just profits (Arnold and Voigt 2017; Haubert, 2019; Kiel). Startups also increase competitiveness in the markets, causing large companies to rethink their processes, invest in technology and remodel their strategies. Startups also play an important role in stimulating the public sector, providing huge efficiency gains in government organizations and public services, helping to establish competitive regulatory environments. The rapid evolution of startups has led regional and national governments to invest to accelerate the growth of an ecosystem of startups.

3. Problematization

In the pursuit of full integration of the value chain, business activities in general are so complex that they require the application of several disciplines at the same time and, therefore, the use of specific technical languages and terminologies. The language of the business world is multifaceted and in order to act at a global level, it is necessary to identify its

characteristics and behaviors, considering the evolution that it has faced mainly with the globalization of markets. It was exactly this language used in the market and in the academic literature about startups that triggered this study.

In the initial research carried out at Google, it was identified that the terms on the classification of the phases of a startup were described in different ways, with very different terms, causing some confusion among the authors. The same term searched for in academic bases was quite scarce and, when located, it was also described in several ways. When researching the target audience on the basis of Google, countless occurrences arose explaining all possible consumer markets for a startup, unlike the academic research, which although making one or more references, it did not classify nor describe that audience. This problem between market nomenclatures and academic nomenclatures can be justified by the fact that startups naturally arose in practice and, due to their importance for economic development, the private sector of the market itself dominated nomenclatures and classifications.

Although the academic bases are full of articles on the startup theme, there is no clear description yet, as the term is still under construction. In order to minimize the dichotomy between professionals and researchers, as well as in academic and market literature, it was decided to conduct a multivocal literature review (MLR), which is composed by writings on a subject discussed by market professionals, often contemporary, but still scarce in academic literature.

4. Methodology

Research arises from doubts and from the absence of specific studies on a given problem. Thus, a previously disordered and fragmented reality can be perceived by science, under the didactic and oriented approach, as an explanatory principle that clarifies and provides an organized and structured understanding. In this sense, scientific knowledge is expressed as statements that explain the conditions that determine the occurrence of facts and phenomena related to a problem, shedding light on the schemes and systems of dependence that exist among their properties (Koche, 2011). Scientific knowledge is the result of scientific research, which may arise from the need to find solutions to practical problems in some area of life.

According to Koche (2011), scientific research begins with the identification of a doubt, of a question that still has no answer, or with the recognition that the existing knowledge is insufficient or inadequate to clarify that doubt, or that it is necessary to build an answer to that question, or to make it offer evidence of safety and reliability to justify itself as a good answer. Scientific knowledge is, therefore, what is built through procedures that show a scientific attitude and that, by providing conditions for experimenting with its hypotheses in a systematic and objective way, can be exposed to criticism, offering greater security and reliability in the results.

Bibliographic research is the one that is developed by trying to explain a problem, using the knowledge acquired from the theories published in books or similar works. In the bibliographic research, the researcher will bring up the knowledge available in the field, identifying the theories produced, analyzing them and evaluating their contribution to help understand or explain the problem that is the object of investigation. The objective of bibliographic research, therefore, is to know and analyze the main theoretical contributions on a given topic or problem, which makes it an indispensable instrument for any type of research.

Thus, the qualitative methodology known as Multivocal Literature Review (MLR) is gaining interest in academic literature due to the combination of the knowledge on the academic state of art and the study of art in practice, called gray literature (GL) and, as a consequence, the literature has been provided with several MLRs in fields such as automation of software testing or serious games for the education of software process standards (Garousi et al. 2017; Myrbakken et al. 2017; Calderón et al. 2018), just to cite only the most relevant and recent cases in the broad field of IT. The results of the study by

Shrivastava (2020) indicate very few mentions to the gray literature (GL), reinforcing the need for a separate worldwide information retrieval system for the gray literature, for researchers to conduct systematic reviews.

Several definitions for GL were found. The most widely used and accepted definition is the so-called Luxembourg definition, stating that GL is produced in various government, academic, business and industry study groups, both print and electronic, and is not controlled by commercial publishers, in other words, in which the publication is not the producer’s main activity (Mering, 2018; Schopfel, 2018; Garousi, 2019). The Cochrane manual for systematic reviews of interventions defines GL as literature that is not formally published in sources such as books or periodicals (Lefebvre, 2008). Besides that, there is a Gray Literature Network (www.greynet.org), dedicated to “research, publication, open access, education and public awareness of gray literature”.

According to Garousi (2019), Systematic Literature Reviews (SLR) studies are increasingly common in the academic field and are valuable because they help professionals and researchers index evidence from a specific research area, which can condense hundreds of articles. Unfortunately, SLR’s are not able to provide all the benefits, as they usually only review the academic literature, excluding large groups of “gray” literature, which is produced by market professionals. The Systematic Literature Review that includes both academic and “gray” texts is called Multivocal Literature Review (MLR). According to Tom (2013) the main difference between the two reviews is that the SLR uses only academic articles as input, whereas MLR also uses sources from the gray literature (GL), such as blogs, videos, whitepapers, and corporate websites.

We started the research by analyzing the terminologies used to classify startups. To achieve our goals, we conducted a pilot study on the available bases of Google, analyzing which terminologies the market professionals, through web pages, blogs and white texts of the area, use to classify the companies known as "startups". Thus, we defined a set of possible words, listed in Table 1.

Table 1. Keywords used in the research bases.

KEYWORDS
startup* AND costumer target
startup* AND target audience
startup* AND target public
startup* AND phase*
startup* AND stage*
startup* AND income model
startup* AND digital architecture
startup* AND terminology

Source: Authors (2020).

After defining the initial set of keywords, we searched several academic databases available. The research generated limited results in terms of peer review in the literature, showing that startups' classifications and nomenclatures have not been explored sufficiently in academic studies. Increasingly, decision makers and market professionals are turning to research-based evidence to support decisions on policies and practices.

Systematic reviews are useful for gathering, summarizing and synthesizing published and unpublished research. The state-of-the-art reviews on academic and non-academic bases, called multivocal literature reviews, are broader than traditional systematic reviews and may include not only published and unpublished research, but also published and unpublished non-scientific literature (Benzies, 2006). Therefore, it was decided to expand the research process in order to collect information in gray literature (to include professional points of view), along with technical research articles. To do so, we conducted a search on the gray literature by expanding the research database with sources such as technical articles, white articles, books or web

pages regarding the classification of startups, using the same keywords. For such research we include the Google search engine.

Thus, for academic exploratory research, the Scopus (Elsevier) and Web of Science research bases were used, and for the “gray” research base, the Google Scholar platform and the Google search engine were used. In the academic bases Scopus and Web of Science some sets of words presented a higher number of results: startup * AND phase *, startup * AND stage *, startup * AND income model, startup * AND Digital Architecture. Then the following filters were carried out: period from 2018 to 2021, due to the topicality of the theme; Portuguese, Spanish and English languages, due to the difficulty of translation, and we opted for reading open-source articles.

At Google Scholar, citations and patents were excluded, only the years from 2017 to 2020 were filtered (to maintain four years of research as in the academic bases, for there was no publication for 2021) and the same languages as in the academic research were used. For the Google search engine, we have filtered the period just like we did in Google Scholar (2017 to 2020, with the same justification as Google Scholar), as well as the languages Portuguese, Spanish and English, due to the difficulty of translating the other languages. As primary results, 366 occurrences were found in the academic bases Scopus and Web of Science, 126,690 articles in Google Scholar and 710,300 sources in the gray base of the Google search engine, as shown in Table 2.

Table 2. Occurrences located in the bases of multivocal literature search.

KEYWORDS	SCOPUS	WEB OF SCIENCE	GOOGLE SCHOLAR	GOOGLE
startup* AND costumer target	0	0	17200	55400
startup* AND target audience	10	7	15200	21900
startup* AND target public	9	14	17100	106000
startup* AND phase*	0	75	17900	163000
startup* AND stage*	45	72	17400	165000
startup* AND income model	18	23	17200	46300
startup* AND digital architecture	38	28	16600	148000
startup* AND terminology	17	10	8090	4700
Sub total	137	229	126690	710300

Source: Authors (2020).

In the search for peer-reviewed academic articles, as shown in Table 2, we have found 366 occurrences, but the number of occurrences in the Google Scholar and Google search bases was extremely high. Unlike the formal literature, which normally follows a controlled review and publication process, the processes for GL are more diverse and less controlled. Consequently, the quality of GL is more diverse and generally more laborious to evaluate. Assessing the quality of fonts in the gray literature, determining to what extent a font is valid and free from prejudice is the most difficult part. So, to reduce the possibility of human error and bias in the collection of information, some criteria were elaborated.

According to Table 2, the number of articles retrieved from the Google Scholar and Google search engine totaled 836,990 primary occurrences. To evaluate these articles, the following inclusion and exclusion criteria were used:

- Exclusion of repeated occurrences;
- Due to the repetition of occurrences and the distance between keywords and occurrences mentioned as the pages progress, as well as the physical limitation to analyze the number of occurrences, it was decided to analyze the occurrences of the first five pages.

- Whether the URL was available and the content of the article was included.
- If the theme of the web page was startup and if it contained real information about the keywords, the article was included.
- Only text-based web pages were considered for inclusion. Pages whose main content included videos, audios or images were excluded. Quora, Slideshare and LinkedIn pages were also excluded.
- Advertising or sales pages were excluded.
- Duplicate pages were also excluded.

After applying the inclusion and exclusion criteria, we selected fifty-two primary articles. Eight of the articles were rejected because they did not provide primary information, as well as other thirteen articles that lacked sufficient information related to the topic and some articles that were found in both electronic databases. We then combined the articles from the peer review and unrevised peer-reviewed literature and found three duplicates. The removing of these duplications resulted in twenty-eight main articles for quality assessment and for data extraction and synthesis. Academic peer-reviewed articles resulted in 366 occurrences, duplicate articles were removed, articles without information on the topic and articles without relevant information on the keywords were rejected, resulting in twelve primary articles.

Thus, the primary database for the MLR was 40 articles for reading, data extraction, synthesis and evolution for the analysis of the results.

5. Results and Discussion

The results are presented in Tables 3, 4 and 5. The nomenclatures, terminologies and classifications are very important to guide and make information bases comparable (Marin, 2009; Barra, 2011). The multivocal search of the literature on the terminologies and classifications of startups allowed the presentation of this information in order to compare the various existing bases on the theme. After analyzing the occurrences in the primary databases and subsequent research with a secondary bias, it was identified that startups are classified according to a standard. The market, according to gray literature analysis, uses the various nomenclatures which were used in the research, following the methodology presented in item 3 and in table 2. In the academic base research, no mention was made on the startups' classifications.

The number of events, the analysis of occurrences and the study of the articles in each classification group, led to the agreement on the use of the following terms:

- To define customers: target public
- To define income: income model
- To define the phases: stage

The proposed definitions constitute a reference terminology, with the presentation of concepts that may facilitate the mapping of the startups terms, providing the integration of information, as well as enabling comparative research and analysis of results in order to improve and strengthen the current ecosystems. Thus, due to the higher number of occurrences in the research groups, it was agreed that startups can be classified according to target public (Table 3), income model (Table 4) and stage (Table 5) and that these classifications can be described according to the tables below:

Table 3. Nomenclature and classification of Startups according to the Target Public.

Abbreviation	Meaning	Description
B2B	Business and Business	Term used for companies whose clients are other companies.
B2B2C	Business and Business to Consumer	Term used for companies that sell to other companies, focusing on individuals.
B2C	Business to Consumer	Term used for companies that have individuals as their customers (retail logic).
P2P	Peer to Peer	Term used for paired relationship between network and people in the collaborative logic.
B2S	Business to Social	Term used for companies that focus on social businesses.
B2G	Business to Government	Term used for companies that sell to public organizations / entities.

Source: Authors (2020).

Table 4. Nomenclature and classification of Startups according to the Income Model.

Nomenclature	Description
API	Application Programming Interface is a set of instructions that determines a communication pattern between two different software so that they can exchange information with each other.
Consumer	Develops products and services to serve the final consumer.
E-commerce	Term used to refer to the sale of products and services over the internet, where transactions are carried out via electronic devices, such as computers, tablets and smartphones. This type of commerce can take place through virtual stores, marketplaces, sales on social networks and even sales by e-mail marketing.
Hardware	It develops physical, patentable products, including not only the finished product to the list, but also those that develop sensors, chips and boards.
Licensing	Develops programs or systems that facilitate obtaining licenses.
Data selling	Develops solutions for monitoring and metrics, analysis and data enrichment.
Others	Not mentioned

Source: Authors (2020).

Table 5. Nomenclature and classification of Startups according to the Stage.

Nomenclature	Description
IDEA	Startup idealization, definition and organization of the business.
START	Start of business activities, assembling a team, starting a company, when the startup comes into existence.
TRACTION	When there is quantitative evidence that a startup has a market, it is proof that someone wants the product or service offered. The most common ways to prove traction are: profitability, revenue, active users and registered users.
GROWTH STAGE	Growth stage of the startup.
SCALE	Term used to refer to companies with at least 10 employees, that grow at least 20% per year for three years in a row.
ESTABLISHED	Established in the market (can it still be considered a startup?)
EXIT	Being acquired by another company or making an IPO.

Source: Authors (2020).

The nomenclatures and classifications presented in Tables 3, 4 and 5 are a proposal for standardization in the startups academic environment, reducing the dichotomy between academics and professionals, introducing the terms in the academic bases and facilitating the discussion of the topic. This standardization will make it possible to compare the global databases on startups, promoting studies and analyzes for greater investment in the ecosystems, whether with private or public resources. As the company grows, it evolves and qualitative changes are often seen in its internal organization.

The phases of startups are mentioned by several authors, but with wide divergence. Oliveira (2019) uses the methodology of Reynolds et al (2004) to describe the phases of startups based on the human life cycle (idea - gestation - childhood - adolescence), although these phases have a certain logic, they are not used in the market bases. The Startup Genoma (2019), on the other hand, briefly characterizes the phases as Activation, Globalization, Attraction and Integration; although it is an adequate nomenclature in current market practice, it is very brief and unusual. Freeman and Engel (2007), on the other hand, simply characterize it in three phases (start - consolidation - expansion) differently from the ABStartup platform, which uses a more modern and updated nomenclature by professionals in the area, which are ideation - traction - scaleup - operation - out of operation. This lack of standardization makes it difficult to analyze and discuss the development phases of a startup.

In defining the business model, one of the most important components is the profile of its potential consumers, which may be other companies (B2B), the government (B2G), the end customer (B2C) or some other mentioned in table 3. This nomenclature it is widely cited in the gray bases, but without definition in the academic bases and of extreme importance for the leverage of any startup, as all businesses converge to serve a certain audience. The adequacy of this nomenclature will enable researchers to better describe this information in their research, developing more effective strategies for the survival and growth of startups.

The phases and the target audience are classifications that can be used by startups of any nature, whether economic or social, with or without the use of technological base. When researching the income model, however, only in the gray literature it was possible to collect data, probably because they are new terms and mostly aimed at technology-based startups. Although not mentioned in the academic bases linked to startups, the definition of the income model is as important as the target audience, as it will be the guiding thread that will lead consumers to the startups' products and services.

6. Final Considerations

This study had the goal of proposing a nomenclature, terminology and standard classification of startups. In the analysis, it was clear that the collaboration between market professionals and academic researchers in the startup environment

provides faster and broader knowledge. This union of thinking and performing professionals makes the economy more dynamic and conducive to the innovations that arise routinely, generating more jobs, income, stimulating new market entrants and improving the quality of products and services offered.

The contribution of this work consists of promoting advances in market practice and academic discussions about startups, given the importance of the theme for innovation, development and competitiveness of companies and countries. Knowledge is based on the improvement, correction, expansion or replacement of acquired knowledge. What is observed, in scientific knowledge, is a constant resumption of theories. Thus, this research was the beginning of a study and it further study on the subject is needed.

As for the limitation of the research, it is important to note that the study used its own parameters and four data sources, which represents an opportunity for future studies on the subject to explore other data sources and research methodologies. Subsequently to this study, the authors will address the diversity of segments of technology-based startups.

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