

**RESEARCH OVERVIEW ABOUT COMPETENCIES OF STARTUPS**

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ARTICLE INFO	<b>ABSTRACT</b>
<p><b>Article history:</b></p> <p><b>Received</b> 20 November 2021</p> <p><b>Accepted</b> 28 January 2022</p>	<p><b>Purpose:</b> The aim of this paper was to contextualize the research scenario about startup competencies.</p> <p><b>Design/methodology/approach:</b> The systematic literature review was built from the content analysis of 71 papers from Web of Science and Scopus database. The papers were analyzed from descriptive, bibliographic, methodologic, results and citation characteristics.</p> <p><b>Findings:</b> From the results, it is observed that the USA is the absolute stand in studies related to startups and competencies. However, other nations also have developed relevant studies. Studies related to startups and competencies still are at a very theoretical stage, which creates a demand for the development of studies that collect and provide scientific data to the market about these enterprises.</p> <p><b>Research, Practical &amp; Social implications:</b> Eight competences were mapped, being constituted by three fundamental stages for the construction of a startup.</p> <p><b>Originality/value:</b> This article is an academic contribution that allows an understanding about research developed on startups and their competencies, considering data from two reference research databases.</p> <p>Doi: <a href="https://doi.org/10.26668/businessreview/2022.v7i2.293">https://doi.org/10.26668/businessreview/2022.v7i2.293</a></p>
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## PANORAMA DE PESQUISA SOBRE COMPETÊNCIAS DE STARTUPS

**Objetivo:** O objetivo deste estudo foi contextualizar o panorama da pesquisa sobre competências de startup.

**Desenho/metodologia/abordagem:** A revisão sistemática foi construída a partir da análise de 71 artigos dos bancos de dados da Web of Science e da Scopus. Os artigos foram analisados a partir de características descritivas, bibliográficas e metodológicas dos resultados e citações.

**Resultados:** A partir dos resultados obtidos, verificou-se que os EUA são destaque absoluto em estudos sobre startups e competências. Porém, outras nações também tem desenvolvido estudos relevantes, especialmente países com economia de mercado mais robusta. Os estudos relacionados a startups e competências ainda se apresentam em estágio teórico, criando uma demanda por estudos que forneçam dados qualitativos ou quantitativos acerca destes empreendimentos para o mercado.

**Pesquisa, implicações práticas e sociais:** Foram mapeadas oito competências que se apresentam nos três estágios do ciclo de vida das startups.

**Originalidade/valor:** Este artigo é uma contribuição acadêmica que permite uma compreensão acerca das startups e suas competências, considerando dados oriundos de duas bases de dados referenciais de pesquisa.

**Palavras-chave:** Capacidades, Competência, Competências de startups, Startup.

## PANORAMA DE LA INVESTIGACIÓN SOBRE LAS COMPETENCIAS DE STARTUPS

**Propósito:** El objetivo de este estudio fue contextualizar el panorama de investigación sobre las competencias de las startups.

**Metodología:** La revisión sistemática se construyó a partir del análisis de 71 artículos de las bases de datos Web of Science y Scopus. Los artículos fueron analizados a partir de las características descriptivas, bibliográficas y metodológicas de los resultados y citas.

**Conclusiones:** A partir de los resultados obtenidos, se encontró que EUA es un punto destacado a bsoluto en los estudios sobre startups y competencias. Sin embargo, otras naciones también han desarrollado estudios relevantes, especialmente países con economías de mercado más robustas. Los estudios relacionados con startups y competencias aún se encuentran en una etapa teórica, lo que crea una demanda de estudios que brinden datos cualitativos o cuantitativos sobre estos emprendimientos al mercado.

**Implicaciones de la Investigación:** Se mapearon ocho competencias que están presentes en las tres etapas del ciclo de vida de startups.

**Originalidad/valor:** Este estudio es una contribución académica que permite una comprensión de startups y sus competencias, considerando datos provenientes de dos grandes bases de datos.

**Palabras-clave:** Capacidades, Competencia, Competencias Startup, Startup.

## INTRODUCTION

The terminology “startup”, due to its very recent rise as a study area, still does not have a universal definition by the scientific community, being the most accepted the one that describes the startup as an early-stage venture created and developed to launch products and/or innovative services in the market (Bortolini, Nogueira Cortimiglia, Danilevicz & Ghezzi, 2018). Studies attribute to startups the objective of carrying out activities in conditions of great uncertainty in the market, in the same way that they must have a replicable and scalable business model inside their local context and visualizing a future macro business perspective (Moen & Servais, 2002; Picken, 2017; Linton, 2019).

Like so many other entrepreneurship areas, startups need a set of tools to explore market opportunities (Harms & Schwery, 2020). These tools are defined as knowledge that are directed to the performance of certain activities and business behaviors that guide the development of startups from their foundation until reaching the stage of market expansion can be called competencies (Knight & Cavusgil, 2004; Linton, 2019; Puriwat & Tripopsakul, 2022). The study of competencies is deep related in the fundamentals of resource-based view (RBV) and is also explored inside the perspective of dynamic capabilities (Teece, Pisano & Shuen, 1997).

It is important to point out that innovation, knowledge and capabilities guide the strategy and performance of the startups from its creation to its full development (Knight & Cavusgil, 2004). The accumulation of knowledge as competencies plays an important role in the fast exploitation of new skills, which are identified with the business work experience and in the effective transformation of knowledge into strategic assets of the enterprise itself (Park & Rhee, 2012; Prashantham & Yip, 2017; Loufrani-Fedida, Hauch & Elidrissi, 2019; Noronha, Rodrigues, Longo & Avrichir, 2021; Almeida, Costa, Pires & Pigola, 2022).

Existing so many examples of startups that soon fail in their implementation and market insertion process, managers need to devise strategies to overcome the challenges faced by these newly established ventures (Loufrani-Fedida, Hauch & Elidrissi, 2019). Front this scenario of scientific research about startups (Colombo & Piva, 2008; Abu Bakar, Ahmad, Wright & Skoko, 2017), the question that this study focuses on answering is: “How is the current research panorama of competencies used in ventures classified as startups?” To answer the research problem described, the general objective

of this study is: (i) to show the current research panorama about startup competencies. As a secondary objective: (ii) to map the main competencies of startups present in the literature. The scientific gap that this work seeks to response is create a competency framework for early-stage enterprises, in this case, startups (Bortolini et al., 2018; Wu, 2009). A group of competencies of startups operationalized in the literature were found and can guide the theoretical framework of future works about the startup business environments, the association with their life cycle and main research themes (Haines, 2016; Blank & Euchner, 2018).

## **LITERATURE REVIEW**

### **Startups market insertion**

The concept behind entrepreneurship brings us to a market where we are increasingly seeking to raise the offer both quality and quantity. This point of view prepares entrepreneurs for a complex and uncertain market that may contain periods of independent work. As the research recognized the importance of technology-based entrepreneurship in the capitalism dynamic that we currently found, this knowledge becomes even more relevant. Front this, the challenge is to prepare entrepreneurs to deal with innovation and technology management situations using a set of knowledge, skills and attitudes that allow them to face global challenges (Harms, 2015).

Bosch, Holmström Olsson, Björk & Ljungblad (2013) reported that startups are human institutions designed to offer a new product or service under conditions of extreme uncertainty. Most times, startups have limited resources in terms of people and funding, being executed to very tight deadlines. Front this scenario, be efficient and systematic is very importance; where efficient means to minimize development effort while maximize the value obtained, while systematic means the continually validation whether what you develop generates value for the customer.

In general, startups are associated with fast growth, high confidence in products, process and financing innovation, maximum attention to new technological developments and extensive use of innovative business models and collaborative platforms. Most innovative startups are closely related or even fully dependent of technology, not only as a core of customer value and source of innovation, but also as a platform for developing and delivering that value (Kopera, Wszendybyl-Skulska, Cebulak & Grabowski, 2018).

It is essential to consider that the startups have stages inside their life cycle: birth, growth and decline (Silva, Castro Krauker & Koda, 2020). These stages allow the startup to develop knowledge to articulate its resources, capabilities and competencies, visualizing competitive advantages. Considering the characteristics explained by Silva et al. (2020), for the present article we will treat these denominations by: (a) market insertion; (b) development and (c) consolidation and expansion.

### **Competencies: Theoretical Articulation**

The concept of competence comes from the accumulation of knowledge, skills and abilities to carry out an organizational process (Le Deist & Winterton, 2005). Complementarily, competence implies knowing how to mobilize, integrate and transfer knowledge, resources and skills from individuals to the professional environment in organizations (Teece, Pisano and Shuen, 1997; Fleury & Fleury, 2001). Competency studies are in the foundations of the dynamic resource and capability-based view. For this work, the competencies are observed from the studies of RBV and Dynamic Capabilities (Teece et al., 1997)

Based on this concept, the concept of competence in the startups is used to meet the essential characteristics that govern the processes of creation, formation and development of the business model adopted and the probable international expansion of an enterprise. Thus, the concept of competence is understood as the ability of an individual or an enterprise to mobilize and combine resources (knowledge, qualities and attitudes) in order to initiate, consolidate and expand the enterprise (Elidrissi, Hauch & Loufrani-Fedida, 2017).

Although previous studies have emphasized the importance of competencies, the authors do not provide a specific understanding of competencies in startups, and how these arise and act in the management process (Fleury & Fleury, 2001; Le Deist & Winterton, 2005; Elidrissi et al., 2017). This dynamic is essential to identify the role played by each level in the success of startups and highlight the mechanisms used to operationalize competencies in these businesses (Loufrani-Fedida et al., 2019).

### **International expansion process of startups**

Competencies are also developed in the international context of startup markets (Maciejewski & Wach, 2019; Neubert, 2018). When startups decide to carry out its

internationalization process, they seek to find a niche in the global market to apply its predetermined strategy (Knight & Cavusgil, 2004). These can operate simultaneously in many markets already are in the initial stage or they can even be born global, depending on the entrepreneurial orientation of the global context that will be adopted (Maciejewski & Wach, 2019).

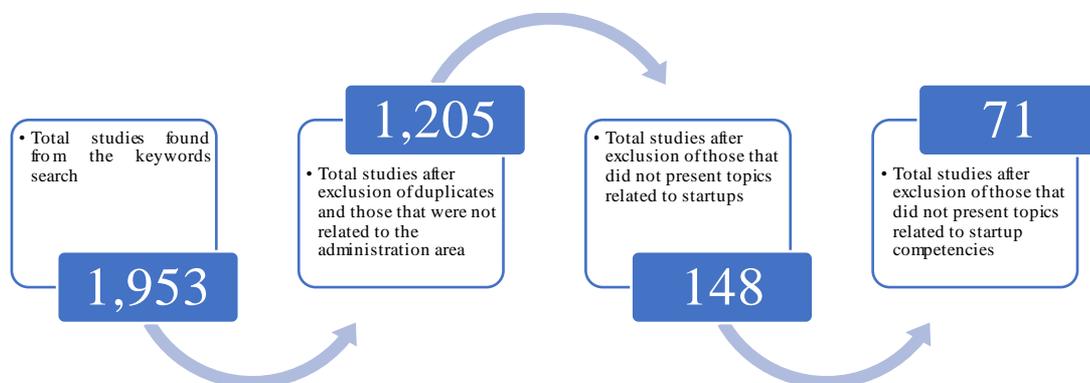
Currently, startup managers face challenges related to the internationalization process of their products and/or services (Le Deist & Winterton, 2005). Due to lower trade barriers, increased competition and fast technological development, these enterprises start their international activities during the first year of operation or, at least, shortly after establishment, allocating part of their sales to foreign markets. The startup creates a new market niche especially through the use of its available technological resources and a new business model. And due to immediate customer and market feedback in this process, products and/or services can be quickly adapted to your needs (Le Deist & Winterton, 2005; Neubert, 2018). It is also important to highlight that a startup, when internationalizing, usually start their operations through upstream activities, such as the development and patent of a certain product or service, before engaging in downstream activities, such as sales, prices and export via operations through digital skills (Neubert, 2018).

## **METHODOLOGY**

The methods used to build the systematic review following those reported by Souza and Ribeiro (2013): (i) create a research problem that guides the research; (ii) choose the aspect to be analyzed in the literature; (iii) filter the collected data according to their relevance to the research problem; and (iv) analyze and interpret the data. The databases chosen were "Scopus" and "Web of Science" taking into account the areas "business", "business finance", "economics" and "management" in the Web of Science, and "business, management and accounting" and "economics, econometric and finance" in the Scopus. The research was carried out between January and April 2020 and January 2022. The choice for these databases occurred due to their databases contain most relevant journals in these areas in the literature (Almeida & Grácio, 2019; Noronha et al., 2021).

There was no predetermined period of time in this research, but the authors only considered publications that used "blind review" process by peers. The authors used the

keywords “startups”, “startup capabilities”, “startup competence”, “startup competencies” and “competencies” to collect the data and obtain the largest possible number of publications about the subject proposed. A total of 1,953 scientific articles published between 1938 and 2021 were found. Firstly, the authors excluded works that had duplication between the two platforms (the same work appearing on both) or that had no relationship with the area of administration, reducing the number of scientific articles to 1,205 published between 1976 and 2021. Next, works that did not specifically deal with topics related to startups were excluded, obtaining 148 articles published between 1996 and 2021. Finally, works that did not deal with startup competencies were excluded, obtaining 71 articles published between 2000 and 2021 (Figure 1).



**Figure 1.** Diagram with the steps used as exclusion criteria.

In a bibliometric view, the selected articles were classified according to descriptive (most cited journals, country of origin and year of publication) and methodological (research method) characteristics; in addition to the results (main research topic) and citations (most cited journals). All selected articles were managed by a database plotted in Microsoft Excel with the reference of each publication and its basic information (abstract, keywords, database, type of study and so on). The R software (R Bibliometrix package) was also used to assist the refinement and segregation of the material present in the databases according to the thematic divisions identified in the results (Aria & Cuccurullo, 2017).

From the reading of the selected papers, the main competences related to startups were mapped, identified and described. Even using a sample of 71 articles, it was possible to map these competencies in a way to identify them based on the implicit and explicit concepts verified in these works and described by Teece, Pisano & Shuen

(1997), based on the foundations of Dynamic Capabilities originating from the resource-based view (RBV) studies.

## ANALYSIS AND DISCUSSION OF RESULTS

### Bibliometric analysis

The results obtained from collected data analysis indicated that four of the five most cited journals were coming from countries that have English as their native language, being two from the USA, one from the UK and another from Canada (Technology Innovation Management Review, the most cited) (Table 1). This predominance of articles related to competencies and startups in journals from English-speaking countries is even more evident when it is observed that all journals listed in this study are published in English.

**Table 1.** Most cited journal mapped in this study (+2).

Journal	Frequency	Impact Factor (JCR 2019)
Technology Innovation Management Review	5	-
Journal of Small Business and Enterprise Development	3	-
Lecture Notes in Business Information Processing	3	-
Research Technology Management	3	-
Small Business Economics	3	4.803
Academy of Management Executive	2	-
Journal of Enterprising Communities - People and Places in the Global Economy	2	-
Long Range Planning	2	4.041
Management Decision	2	2.723
Technological Forecasting and Social Change	2	5.846

**Source:** the authors.

The USA were absolute in number of articles published related to startups and competences. However, in the ranking of the five countries that most published articles about these topics, it was observed a great diversification of schools of thought and languages. This observation becomes more relevant when this view is extended to the 10 countries that most published these articles (Table 2).

**Table 2.** Distribution of articles published according to the country of origin of the study.

Country	Number of articles	Percentage (%)
USA	12	16.90
Brazil	8	11.27
Italy and Sweden	6 (each)	8.45 (each)
France and UK	4 (each)	5.63 (each)
Germany, Finland, Poland and South Korea	3 (each)	4.23 (each)
Australia, Canada, Denmark, Netherlands, India and Taiwan	2 (each)	2.82 (each)
Saudi Arabia, Bulgaria, China, Iran, Israel, Norway and Switzerland	1 (each)	1.41 (each)

**Source:** the authors.

The USA has been massively encouraging the entrepreneurship for decades, so it is not surprising that more studies about startups are being developed by USA institutions (Engel, 2015). However, in recent years, countries such as Brazil, Finland, Poland and Australia have been successful in founding and developing innovative business models, even they are still far from other nations with more robust economies in volume terms (Yehekel, Shenkar, Fiegenbaum & Cohen, 2001; Engel, 2015; Haines, 2016; Salamzadeh & Kesim, 2017; Bhagavatula, Mudambi & Murmann, 2019; Maciejewski & Wach, 2019). In the past, this growth of innovative business models in these countries can be attributed, among other reasons, to a series of initiatives such as public policies of incentive, association and cooperation with universities for the development of new products and/or services (Colombo & Piva, 2008; Oliveira Lacerda, Klein, Fulco, Santos & Bittarello, 2017; Bortolini et al., 2018; Doblinger, Surana & Anadon, 2019; Bocken & Snihur, 2020).

This positive highlight of the USA is confirmed by looking at the articles about the proposed subject that had the highest number of citations (Table 3), where the study developed by Knight and Cavusgil (2004) is the more relevant, especially due to their in-depth research about Born Globals and their pioneering process of internationalization as they expanded into foreign markets and exhibited international business prowess and superior performance in a short post-foundation period. And although the study focuses more on the process of internationalization and expansion of

enterprises, it highlights the critical role of the culture of innovation, as well as the knowledge and capabilities of this type of enterprise.

**Table 3.** Most cited articles (+17).

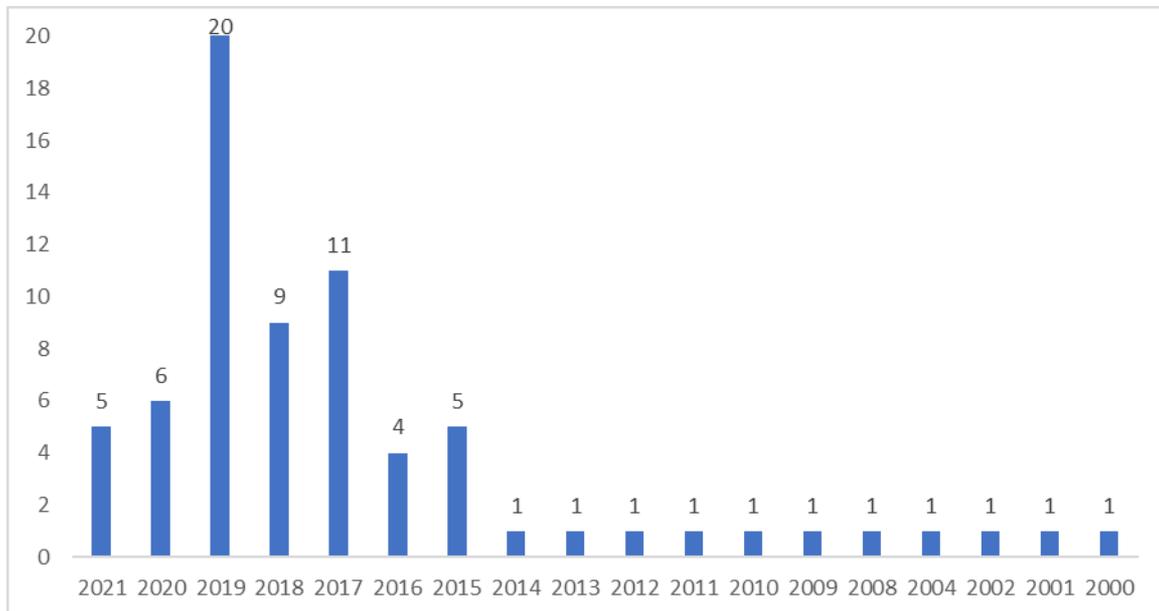
n.	Article	Total citations received (up to the time of the research)
1	Knight & Cavusgil (2004)	1240
2	Moen & Servais (2002)	290
3	Andersson (2011)	111
4	Harms (2016)	54
5	Bosch et al. (2013)	53
6	Saner et al. (2000)	45
7	Colombo & Piva (2008)	38
8	Frederiksen & Brem (2017)	38
9	Ghezzi & Cavallo (2020)	37
10	Engel (2015)	31
11	Andresen & Bergdolt (2017)	23
12	Wu (2008)	21
13	Park & Rhee (2012)	20
14	York & Danes (2014)	19
15	Ghezzi (2019)	17

**Source:** the authors.

There is also an eclecticism among the five articles with the highest number of citations, with emphasis on Sweden, which has two articles (Moen & Servais, 2002; Bosh et al., 2013) and, more extensively, Italy, Switzerland and Denmark, that also present a considerable contribution (Saner, Yiu & Sondergaard, 2000; Frederiksen & Brem, 2017; Ghezzi, 2019; Ghezzi & Cavallo, 2020).

In relation of the research model adopted by the studies about startups and their competencies (Figure 2), it was observed a preference for theoretical studies (66.66%), with few studies evaluating these themes in a qualitative (19.70%) or quantitative (3.04%) approach, or even using a mixed analysis model – Quantitative x Qualitative (10.60%). However, this result would be associated with the fact of this theme is very recent in studies of management and administration, which implies in an embryonic stage of theoretical construction. This finding becomes more evident observing the

concentration of studies developed about this subject based on the year of publication (Figure 2), where there is a clear and evident prevalence of studies in the last six years.



**Figure 2.** Articles classified according to the year of publication. **Source:** the authors.

### *Thematic Analysis Clusters*

Four main themes (clusters) were identified as central themes of articles about startups during its content analysis: (1) Lean Startups; (2) Entrepreneurship; (3) Regional Startup and (4) Internationalization (Table 4). These clusters also contain research questions that compose an agenda to direct future researches about startups.

It was observed a great focus of these studies for research about processes related to “Lean Startup”, where the “Lean” line of thought revolves around the central idea of maximizing customer value and minimizing waste. In this case, “Lean startups” are ventures essentially based on the application of this scientific method in startups, where it focuses on creating only what the customer really values and has the potential to consume (Järvi, Taajamaa & Hyrynsalmi, 2015; Chen, Chen, Yang & Chiang, 2017; Bortolini et al., 2018; Euchner, 2019; Felin, Gambardella, Stern & Zenger, 2019; Silva, Ghezzi, Aguiar, Cortimiglia & ten Caten, 2019; Yang, Sun & Zhao, 2019).

**Table 4.** Articles categorized into clusters according to the main theme of the study.

Clusters	References associated with the theme	Guiding research questions about the theme
<b>Lean Startup</b>	Taipale (2010); York & Danes (2014); Järvi et al. (2015); Rasmussen & Tanev (2015); Harms (2016); Chen et al. (2017); Frederiksen & Brem (2017); Still (2017); Blank & Euchner (2018); Bortolini et al. (2018); Buhl (2018); Semcow & Morrison (2018); Yordanova (2018); Carroll & Casselman (2019); Euchner (2019); Felin et al. (2019); Galli (2019); Ghezzi (2019); Hwang & Shin (2019); Mansoori, Karlsson & Lundqvist (2019); Silva et al. (2019); Werwath (2019); Bocken & Snihur (2020); Ghezzi & Cavallo (2020); Harms & Schwery (2020); Shepherd & Gruber (2020); Vliet (2020);	<ul style="list-style-type: none"> <li>▪ <i>How do competencies play a role in the lean startup business model?</i></li> <li>▪ <i>How can competencies contribute to the internationalization of Lean Startups?</i></li> <li>▪ <i>How can digital competencies of startups accelerate the internationalization processes of Lean Startups?</i></li> <li>▪ <i>What are the competencies that enable innovation and networking in Lean Startups?</i></li> </ul>
<b>Entrepreneurship</b>	Colombo & Piva (2008); Wu (2009); Bosch et al. (2013); Vieira, Alcantara, do Prado & de Souza Bermejo (2015); Bennett (2016); Blume-Kohout (2016); Elidrissi et al. (2017); Picken (2017); Kopera et al. (2018); Sick et al. (2018); Balocco et al. (2019); DelBosco et al. (2019); Doblinger et al. (2019); Ferguson & Henrekson (2019); Linton (2019); Yang et al. (2019); Yang, Kher & Newbert (2020); Choi, Han & Kwak (2021); Ottonicar, Souza & Valentim (2021); Rodrigues & Noronha (2021); Santos & Torkomian (2021); Teixeira, Moura, Lopes, Marconatto & Fischmann (2021);	<ul style="list-style-type: none"> <li>▪ <i>How do startups' competencies help to forward the concept of entrepreneurship and innovation?</i></li> <li>▪ <i>How can startup competencies influence effectuation and causation in entrepreneurship studies?</i></li> <li>▪ <i>What is the relationship between entrepreneurial competencies and the development of the startup cycle?</i></li> <li>▪ <i>What are the main competencies in the business model of startups that characterize them as innovative ventures?</i></li> </ul>
<b>Regional Startup</b>	Engel (2015); Haines (2016); Skala (2016); Abu Bakar et al. (2017); Prashantham & Yip (2017); Salamzadeh & Kesim (2017); Shukla et al. (2018); Bhagavatula et al. (2019); Giudici et al. (2019); Maciejewski & Wach (2019); Yeheskel et al. (2019);	<ul style="list-style-type: none"> <li>▪ <i>How do competencies enable startups to adhere to the concept of “think global, act local”?</i></li> <li>▪ <i>What capabilities are related to startups that have an action aimed at solving local problems?</i></li> </ul>
<b>Internationalization</b>	Saner et al. (2000); Moen & Servais (2002); Knight & Cavusgil (2004); Andresson (2011); Park & Rhee (2012); Andresen & Bergdolt (2017); Tanev (2017); Neubert (2018); Haddad & Hornuf (2019); Loufrani-Fedida et al. (2019);	<ul style="list-style-type: none"> <li>▪ <i>How do startups' competencies affect their expansion and internationalization process?</i></li> <li>▪ <i>How can the internationalization process influence the creation of the business model of startups and their competencies?</i></li> <li>▪ <i>What is the relationship between Innovation Ecosystems (Incubators, Accelerators, Universities, Investors and Enterprises) and the development of startup competencies?</i></li> <li>▪ <i>What are the main competencies developed in Born Global startups in emerging markets?</i></li> <li>▪ <i>How can the orchestration of competences in startups enable the internationalization of enterprises?</i></li> </ul>

**Source:** the authors.

There is also a great presence of "Entrepreneurship" as central theme of studies about startups, which is natural considering that the own concept of startup is closely linked to entrepreneurship. In this sense, we have entrepreneurs both in an internal environment, within an organization, as a manager or director, and in an external environment, setting up innovative new businesses to add value to what they produce or supply to the market (Wu, 2009; Kohout, 2016; Bortolini et al., 2018; Sick, Bröring & Figgemeier, 2018; Del Bosco, Chierici & Mazzucchelli, 2019; Giudici, Guerini & Rossi-Lamastra, 2019).

The "Regional startups" studies showed a focus on analyzing how startups interact with their local markets, not extending their scope of study beyond the borders of their country of origin. The "Internationalization" studies, as the nomenclature itself suggests, concern the analysis in the internationalization process of startups or their consolidation in the market beyond the borders of their country of origin. This cluster includes studies about Born Global and Global Startup (Saner et al., 2000; Moen & Servais, 2002; Rasmussen & Tanev, 2015; Haines, 2016; Abu Bakar et al., 2017; Tanev, 2017; Shukla, Chauhan & Saumya, 2018; Ferguson & Henrekson, 2019; Maciejewski & Wach, 2019).

### **Mapped Competencies**

During the analysis of the selected articles, eight key competences were mapped, approaching since the startup's insertion in the market, its development period and guiding it through its consolidation in the market and expansion to other markets. The competences mapped and articulated by the startups in the literature were: (1) Market competence; (2) Construction and reconfiguration competence; (3) Innovation competence; (4) Networking competence; (5) Digital competence; (6) Technological competence; (7) Leverage competence; and (8) International expansion competence. During the analysis of the selected articles to map the competencies, it was possible to identify that these same competencies appear in the analysis of international markets. In this sense, these competencies are also presented in the international context and are explained in the sections below.

### **Market competence**

The first competence mapped was the Market Competence, which concerns the ability to understand the demand of local and international consumers, and explore opportunities to create added value to the product and/or service to be made available for a particular market niche (Kopera et al., 2018; Carroll & Casselman, 2019). In this competence, the focus is directed to the most embryonic stage of an enterprise, where the idealization of the product and/or service is divided with the creation of the business model that will be adopted by the startup as an enterprise that intends to enter the market (Del Bosco et al., 2019; Giudici et al., 2019; Silva et al., 2019; Vliet, 2020).

### **Construction and Reconfiguration competence**

The Construction and Reconfiguration competence corresponds to the ability of the enterprise to build connections with possible consumer markets in order to introduce its products and/or services. A key element in this competence is the mapping of the consumer market to be impacted so that the products and services to be made available are compatible with market demands (Blank & Euchner, 2018; Ghezzi & Cavallo, 2020).

### **Innovation competence**

The Innovation Competence is naturally related to the context of startups, especially due to these are business models that live in an environment that constantly encourages the development of new products and/or services, in addition to the reprogramming of routines and processes throughout the workflow. The creations from this innovation process can reside from a technological and digital process to a final product, where startups can reserve their innovations via patents or even using a unique and hard-to-replicate business model (Park & Rhee, 2012; Oliveira Lacerda et al, 2017; Giudici et al, 2019; Järvi Taajamaa et al., 2019).

### **Technological competence**

In the startup development process, “Technological Competence” concerns the ability of startups to develop and work with technologies related to its products and/or

services, especially those linked to the innovation sector. This is a basic competence for the enterprise to enable its process of development and expansion, being related to the knowledge accumulated with hardware, software, databases and various physical systems that give the enterprise progress in a constantly changing environment. In startups, this knowledge is mostly related in the capabilities to operate machines and systems, master analytical and data programs and, front this, provide solutions to streamline responses in the local and international context (Neubert, 2018; Balocco et al., 2019; Ferguson & Henrekson, 2019; Ghezzi, 2019; Ghezzi & Cavallo, 2020).

### **Digital competence**

Recently, there was a split from “Technological Competence” to “Digital Competence”, which considers the startup’s ability to efficiently apply the digital resources available in the market, in addition to the possibility of developing new products and/or services in this area. It is important to mention that the “digital competence” manifests itself in programming skills and software operation that allow managers to explore new ways of doing business at a distance. The use of new technologies such as data science, Big Data, 5G and even 3D printing are trends that should be explored by researchers who want to work on this competence (Neubert, 2018; Balocco et al., 2019; Ferguson & Henrekson, 2019; Ghezzi, 2019; Ghezzi & Cavallo, 2020).

### **Networking competence**

During the structuring process of startup as a solid venture in the market, there is the "Networking Competence", which corresponds to the ability to structure the human resources used to carry out the enterprise's activities and the relation of the enterprise with its customers (Bosch et al., 2013; Elidrissi et al., 2017). The contact’s network is a central factor for establishing relationships and generating productive efficiency in the startups (Shukla et al., 2018; Yang et al., 2020). This competence is built through partnerships inside the innovation ecosystem, and can be considered as the first stage for a startup to expand its market frontiers and reach new consumer markets (Moen & Servais, 2002; Loufrani-Fedida et al., 2019).

### **Leverage competence**

Considering the start of expansion process of startups in the market, we have the “Leverage Competence”, which is related to the scale of priority that the startup has when entering the consumer market of its partners. In this competence, the partnership model that was proposed previously will be decisive to define the investment contribution that must be made so that the startup can consolidate itself in a new consumer market. Leverage competence also concerns the potential of the targeted market and its ability to provide the necessary structure to meet distribution and logistics in the delivery of products and/or services (Moen & Servais, 2002; Knight & Cavusgil, 2004; Rasmussen & Tanev, 2015; Andresen & Bergdolt, 2017; Ghezzi & Cavallo, 2020).

### **International expansion competence**

Finally, there is the “International Expansion Competence”, which concern everything from the startup’s arrival in a new market to its consolidation in it, considering all stages of export, import and operations in international markets (Moen & Servais, 2002; Anderson, 2011). This competence is a typical characteristic of innovative business models such as startups, where entrepreneurs guide startup enterprises towards global-level thinking from the beginning, regardless of the business scale (Wu, 2009; Andresen & Bergdolt, 2017; Picken, 2017; Neubert, 2018; Ghezzi, 2019).

### **Mapped competencies and the startups life cycle**

From the analysis of the competences mapped in relation to the startup life cycle (Table 5), it was observed links between these competences and each stage of startups life cycle. The analyzes of each stage and these competencies are present in Table 5.

**Table 5.** Mapped competencies related to each stage of startups life cycle.

Competencies	Startup's life cycle	Key references
Market competence	MI	Kopera et al. (2018); Carroll & Casselman (2019); Del Bosco et al. (2019); Giudici et al. (2019); Silva et al. (2019); Vliet (2020); Knight & Cavusgil (2004)
Construction and Reconfiguration competence	MI	Vliet (2020); Ghezzi & Cavallo (2020); Blank & Euchner (2018); Teixeira et al. (2021);
Innovation competence	MI	Knight & Cavusgil (2004); Park & Rhee (2012); Oliveira Lacerda et al. (2017); Giudici et al. (2019); Järvi Taajamaa et al. (2019);
Digital competence	DEV	Neubert (2018); Balocco et al. (2019); Ferguson & Henrekson (2019); Ghezzi (2019); Ghezzi & Cavallo (2020); Santos & Torkomian (2021);
Technological competence	DEV	Neubert (2018); Balocco et al. (2019); Ferguson & Henrekson (2019); Ghezzi (2019); Ghezzi & Cavallo (2020);
Networking competence	DEV	Moen & Servais (2002); Wu (2009); Bosch et al. (2013); Andresen & Bergdolt (2017); Elidrissi et al. (2017); Picken (2017); Neubert (2018); Shukla et al. (2018); Ghezzi (2019); Loufrani-Fedida et al. (2019); Yang et al. (2020); Ottonicar et al. (2021);
Leverage competence	C&E	Moen & Servais (2002); Knight & Cavusgil (2004); Ghezzi & Cavallo (2020);
International expansion competence	C&E	Moen & Servais (2002); Knight & Cavusgil (2004); Andersson (2011); Rasmussen & Tanev (2015); Andresen & Bergdolt (2017).

**Source:** the authors. **Subtitles:** MI – Market insertion. DEV – Development. C&E – Consolidation and Expansion.

### Market insertion stage

Initially, in the market insertion stage, there is a focus on “market competence”, where there is a mapping of possible market demands and the creation of products and/or services that will fill these gaps. At the same time, there are the R&D processes considered by the “innovation competence” that will also help in the decision making

about the possible consumer and public markets that will be served by the enterprise. There is also the construction of contacts and links with the possible consumer market, which is linked to the “construction and reconfiguration competence” (Colombo & Piva, 2008; Vieira et al., 2015; Bennett, 2016; Oliveira Lacerda et al., 2017; Del Bosco et al., 2019).

### **Development stage**

In the development process of startups, where the focus is directed to the implementation and growth of the enterprise, there is the “networking competence”, which concerns both the way of the enterprise structures and prepares its human resources, and the way of the enterprise relates with their customers (Andresen & Bergdolt, 2017; Mansoori et al., 2019; Yang et al., 2020). Front this, there is also the “technological competence”, which is related to the ability of the enterprise to deal both the technologies currently available on the market and that can be applied to the products and/or services in focus, as well as the possibility of creating new technologies. Recently, there was also create the “digital competence”, which deals with the same principle as the previous competence, but in a digital scope that is increasingly present in the contemporary world (Skala, 2016; Haddad & Hornuf, 2019).

### **Consolidation and expansion stage**

In the process of consolidating and expanding of startup's market frontiers, there is the leverage competence, that concern the formation of contacts and previous alliances to open the priority in negotiations and entry into new markets, enabling a more organized, accelerated and profitable expansion process. Finally, when all competences converge and work positively each other, the international expansion competence can be correctly worked out and enable the activities of enterprise in new consumer markets (Knight & Cavusgil, 2004; Elidrissi et al., 2017; Loufrani-Fedida et al., 2019).

### **Clusters and mapped startup competencies**

In addition to framing the competencies inside the stages of the startup's life cycle, the creation of the clusters presented in Table 4 allowed us to identify that the

mapped competencies also could be framed in each of the study themes corresponding to their clusters (Table 6). It is essential to emphasize that these competencies transit between the identified themes and that they are systematically operationalized according to the analysis of the selected articles.

**Table 6.** Relationship between competences and thematic clusters.

Lean Startup	Entrepreneurship	Regional Startup	Internationalization
<ul style="list-style-type: none"> <li>• Market competence<sup>1</sup></li> <li>• Construction and Reconfiguration competence<sup>2</sup></li> <li>• Innovation competence<sup>3</sup></li> <li>• Technological competence<sup>4</sup></li> <li>• Digital competence<sup>5</sup></li> <li>• Networking competence<sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Market competence<sup>1</sup></li> <li>• Innovation competence<sup>3</sup></li> <li>• Technological competence<sup>4</sup></li> <li>• Digital competence<sup>5</sup></li> <li>• Networking competence<sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Market competence<sup>1</sup></li> <li>• Construction and Reconfiguration competence<sup>2</sup></li> <li>• Technological competence<sup>4</sup></li> <li>• Digital competence<sup>5</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Networking competence<sup>6</sup></li> <li>• Leverage competence<sup>7</sup></li> <li>• International expansion competence<sup>8</sup></li> </ul>

**Source:** the authors.

**Subtitles:**

- <sup>1</sup> Understand the market, explore opportunities and create or add value to products and/or services;
- <sup>2</sup> Build connections with possible consumer markets and evaluate the impact of its products and/or services;
- <sup>3</sup> Create products, services or processes that make the enterprise unique and different from others in the market;
- <sup>4</sup> Development and use of technologies to enable the work of the enterprise, always being updated with new trends;
- <sup>5</sup> Use of digital resources to enable the work of the enterprise, being able to develop new resources or adapt existing resources;
- <sup>6</sup> Creation of links and relationships between the human resources that compound the enterprise and with potential customers and other market elements;
- <sup>7</sup> Establishment of partnerships and commercial relationships that allow the consolidation of the enterprise in the market and enable its expansion process;
- <sup>8</sup> Expansion of the commercial frontiers of the enterprise and arrival in new consumer markets;

## CONCLUSIONS

Based on the results obtained after analyzing the articles mapped in the Scopus and Web of Science databases, it is concluded that the entrepreneurial culture of the USA makes this country prominent in studies related to startups and competences. However, other nations have also developed relevant studies about the essential elements that constitute this business model, especially those that already have a more stabilized and robust market economy. In addition, studies related to startups and competencies are still at a very theoretical stage, which creates a demand precedent for studies that collect and provide scientific data in a quantitative and/or qualitative way.

After mapping the content of selected articles, eight competencies were found. It was observed that these competencies are present in each stage of the life cycle of startups, considering from this insertion in the local market to the expansion for other markets. In addition, it was also observed that these competencies are directly interconnected with the four major areas of research classified into clusters (Lean startups, Entrepreneurship, Regional startup and Internationalization) that was identified in this study.

This article is an academic contribution that allows a basic understanding of the research developed about startups and their competencies, considering data from two reference research databases. In the theoretical view, this study approaches a conceptual explanation about startups' competencies, the connections of competencies with each stage of the startups' life cycle and its main research themes. In the managerial view, this study approaches a contribution about how competences can help and influence each stage of a startup's development, leading it to success through the management of human and productive resources. In the social view, this study approaches a critical view about the influence of competences and the knowledge accumulated by them on the innovation environment and the development that this can provide for the local and international productive ecosystem.

For future studies, it is suggested to use the competencies and clusters found to understand phenomena related to startups in order to explore new ways inside the innovation ecosystems (accelerators, incubators, universities and technology hubs). In this sense, there is a natural tendency in the coming years for the development of studies about startups in the clusters identified. In addition, studies about the use of digital

competences and the role of innovation ecosystems are increasingly in the focus of researches about startups.

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