INFORMATION SOURCES FOR STARTUPS
GUIA DE FONTES DE INFORMAÇÃO PARA *STARTUPS*

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ABSTRACT

The creation of startups must be accompanied by the implementation of an infrastructure that ensures their development and consolidation. Thus, the university-company approximation is necessary for offering infrastructure that provides access to scientific and technological information. For this purpose, we intend to identify the startups installed in the city of São Carlos (SP, Brazil) and their demands for this type of information. With this, we will develop a guide of information sources from the most used information resources identified in two studies of the Information Science field. We will list the open access and institutional access information sources available at the University of São Paulo that favor the development of startups. The form of distribution will be in printed format, to be distributed to the startups, universities, and other interested parties, as well as in electronic format, which will be made available at institutional portals of the University of São Paulo.

KEYWORDS

Information sources. Scientific information.

RESUMO

A criação de *startups* deve ser acompanhada da implantação de uma infraestrutura que garanta seu desenvolvimento e consolidação. Assim, a aproximação universidade-empresa faz-se necessária para oferecer a infraestrutura que propicie o acesso à informação científica e tecnológica. Para tanto, pretende-se identificar as *startups* instaladas no município de São Carlos (SP) e suas demandas por esse tipo de informação. Com isso, elaborar-se-á um guia de fontes de informação a partir dos recursos de informação mais utilizados que foram identificados em dois estudos da área de Ciência da Informação. Serão listadas as fontes de informação de acesso aberto e de acesso institucional disponíveis na Universidade de São Paulo que propiciem o desenvolvimento das *startups*. A forma de distribuição será nos formato impresso, a ser distribuído para as *startups*, universidades e demais interessados, e eletrônico, que será disponibilizado em portais institucionais da Universidade de São Paulo.

PALAVRAS-CHAVE

Fonte de Informação. Informação científica.

1 Startups in the Brazilian Scope: the case of universities

The Brazilian industrial development is relatively recent compared to that of developed countries, given that it intensified between the 1960s and 1980s, after which it went through a deceleration due to the financing crisis and macroeconomic unbalances. In the 1990s, the number of multinational companies increased in Brazil, notably due to the privatization of some sectors, and, from the 2000s, underwent a period of reforms, including in the Science and Technology scope (OTTOBONI, 2011).

Since then, the Brazilian Federal Government has been developing actions to encourage innovation, such as the promulgations of Law no. 10973 of December 2nd, 2004 (BRASIL, 2004), and Law no. 11196 of November 21st, 2005 (BRASIL, 2005), known as the "Law of Innovation" and "Law of Good", which propose an environment favorable to innovation with the participation of different institutions and define fiscal incentives for companies that perform research and innovation, respectively.

This is one of the measures that have encouraged ever more the professionals that opt for entrepreneurship as a way to develop their products and services. Some entrepreneur initiatives emerge, inclusively, in the academic scope. A recent article of the FAPESP Agency (PIERRO, 2018) presented data of a report of the Organization for Economic Cooperation and Development (OECD) that demonstrate that, in Brazil, Canada, Australia, and India, entrepreneurship has been practiced by university students or recently-graduated persons, unlike what occurs in countries such as the United States, Israel, the United Kingdom, and France, to name a few.

At the University of São Paulo (USP), for example, systemic actions carried out by the USP Innovation Agency1 stand out, such as the support in the areas of intellectual property, technology transfer, and entrepreneurship (UNIVERSIDADE DE SÃO PAULO, 2005), and the joint elaboration with the Integrated System of Libraries of USP (SIBiUSP) of the Patent Bases Tutorial (UNIVERSIDADE DE SÃO PAULO, 2007) as a way of instrumentalizing the academic community in the use of technological information databases.

Regarding the local actions, the São Carlos School of Engineering of the University of São Paulo (EESC/USP) offers infrastructure for entrepreneur initiatives, such as the Advanced Center for Innovation Support (EESCin) (PROENÇA et al., 2014), the "Open Laboratory for Innovation and Entrepreneurship" (UNIVERSIDADE DE SÃO PAULO, 2016), and the Junior Company of the São Carlos School of Engineering (EESC JR), a company directed by students and responsible for boosting entrepreneurship at the university environment (EESC JR, 2018).

The entrepreneur environment inspired by USP also has reflexes on the city of São Carlos, which counts with companies created by former students of EESC and other Units of the USP São Carlos campus and the Federal University of São Carlos (UFSCar). The city also counts with two units of the Brazilian Agricultural Research Corporation (Embrapa Southeast Livestock[1] e Embrapa Instrumentation[2]), one unit of the Brazilian Micro and Small Business Support Service (Sebrae)[3], technological parks (ParqTec[4] e Inova Institute[5]), coworking spaces (WikiLab[6], Space 8[7] e Trampo Collective Space[8]) e innovation ecosystems (Onovolab[9]).

Besides the physical space, other elements compose the infrastructure of a company. Among them is information as a strategic input for supporting decision making, as well as for its updating regarding the technologies and researches carried out in its market niche. On the one hand, it is verified that, in the corporate environment, there is an active exchange of tacit knowledge among people, while on the other hand, the consultation of explicit knowledge is also necessary, be it through printed or electronic information sources (NONAKA; TAKEUCHI, 1997).

To support the decision-making process by the startups installed in the city of São Carlos (SP, Brazil), this work reports the experience of EESC/USP on the elaboration of a guide of information sources that presents the open-access information resources most used by such companies, as well as those available at USP, that offer access to scientific and technological information. We emphasize that the results presented are partial, given this is a project approved and in development under the scope of the 3rd Santander/USP/FUSP Promotion Notice of Culture and Extension Initiatives of the Office of Culture and University Extension of USP. For being a project aimed towards extension, the guide intends to reach the highest number possible of startups of São Carlos (SP, Brazil) and, thus, contribute to the egalitarian access to scientific and technological information by such institutions, as well as broaden the studies about the theme in Information Science (CUNHA; 2001; FONSECA, 2017; SENA; BLATTMANN, 2017).

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[1] Available in: https://www.embrapa.br/pecuaria-sudeste. Acess: 5 abr. 2018.
[2] Available in: https://www.embrapa.br/instrumentacao. Acess: 5 abr. 2018.
[3] Available in: http://www.sebraesp.com.br/. Acess: 5 abr. 2018.
[4] Available in: http://parqtec.com.br/. Acess: 5 abr. 2018.
[5] Available in: http://institutoinova.org.br/. Acess: 5 abr. 2018.
[6] Available in: http://coworkingsaocarlos.com/. Acess: 2 ago. 2018.
[7] Available in: https://e8coworking.business.site/. Acess: 2 ago. 2018.
[8] Available in: http://www.tramposaec.com.br/. Acess: 2 ago. 2018.
[9] Available in: www.onovolab.com. Acess: 5 abr. 2018.

2 Materials and Methods

The focus of the research is qualitative since, as Hernández Sampieri, Fernández Collado, and Baptista Lucio (2006, p. 5) stated, it "[...] uses data collection without numerical measuring to discover or perfect research questions and may or may not prove hypotheses in its interpretation process".

The research consisted of the following steps:

1st - Literature review

The literature review on the theme of information sources for startups was carried out in the Referential Database of Journal Articles in Information Science (BRAPCI)[10], the Brazilian Digital Library of Theses and Dissertations (BDTD)[11], and university library catalogs.

2nd - Survey of the startups installed in São Carlos (SP, Brazil)

The survey was performed in three sources from May to July of 2018: Google search (with the use of expressions startup or startups and "São Carlos"), StartSe Site Ecosystem Map[12] (with the use of expression "São Carlos") and professional social network LinkedIn (with the use of the expression "startup" and Location filter "São Carlos").

3rd - Identification of the information sources most used by startups

From the literature review, we identified two Information Science studies about information sources for startups (FONSECA, 2017; SENA; BLATTMANN, 2017) and another about information sources for micro and small companies (PEREIRA, 2006). From the results of such studies, we identified the most used sources and, then, ranked those available in open access and at USP for compiling the guide.

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[10] Available in: https://www.brapci.inf.br/. Acess: 7 ago. 2018.
[11] Available in: http://bdtd.ibict.br/vufind/. Acess: 7 ago. 2018.
[12] Available in: https://comunidade.startse.com/map. Acess: 1 ago. 2018.

3 Results: presentantion and discussion

Both the studies by Fonseca (2017) and Pereira (2006) adopted the relevance and reliability criteria for the assessment of the information sources. For purposes of the compilation of the guide sources, we selected the criterion of relevance, which indicates those more significant in the view of the managers of startups and micro and small companies.

Chart 1. Information sources most relevant for startups and micro and small companies

Pereira (2006)	Fonseca (2017)
Email (personal and/or corporate)	Clients
Clients	Partners/employees
Coworkers (company consultants)	Databases of the company itself
Search websites on the WEB	Web search engines (prominence for Google)
Newspapers/Journals/Books (on paper)	Partners and suppliers
Newspapers/Journals/Books/News (online)	Social networks
Company website or portal/Internet	Other entrepreneurs
Partners/Suppliers/Analysts/Businesspeople/Self-Employed Professionals	Competitors
Sites/Portals of companies/universities/government	Laws, regulations, and government norms
Library/Information Center or Internal Document	Scientific articles, patents, theses, and dissertations
Online or electronic media databases	Rich content
Corporate journals/articles/theses (on paper)	Financial and market reports
Congresses, fairs, events, trips	Blogs
Radio and television	Congresses, fairs, and events
Laws/technical norms/patents	Promotional material
Government publications (ME/online)	Banks, stock exchange, and investors
Competitors (consultants/consulting companies)	
Memos/newsletters/drafts/reports/projects/studies/maps (internal computer network)	
Financial/business reports (ME/online)	
Business/commercial/industrial/class associations	
Memos/newsletters/drafts/reports/projects/studies/maps (on paper)	
Clippings/Press releases (on paper)	
Publicity agencies	
Employees and former employees of competitors and companies in general	
Promotional material, clippings, and press releases of competitors and/or companies in general	

Source: The authors.

Although the studies were conducted eleven years apart, one may observe that most of the sources remained the same, with the new ones emerging on electronic media such as blogs and rich content[13]. Besides, the comparison between them allowed selecting the following sources to which the University subscribes or of open access, namely: web search engines; laws, regulations, and government norms; scientific articles, patents, theses, and dissertations; financial and market reports; newspapers/journals/books; company site or portal/Internet; websites/portals of companies/universities/government; online or electronic databases; radio and television; and government publications.

The web search engines to be included are those most used currently: Google, Yahoo, and Bing. They allow companies to monitor internal and external aspects. Laws, regulations, and government norms are indispensable sources for the structuring of businesses, both legally and fiscally. Therefore, we selected federal laws (Law no. 10973 of September 2nd, 2004 - "Law of Innovation" - and Law no. 11196 of November 21st, 2005 - "Law of Good"), state laws (Complementary Law no. 1049 of June 19th, 2008, Decree no. 56424 of November 23rd, 2010, and Decree no. 60286 of March 25th, 2014), and municipal laws (Law no. 14202 of September 6th, 2007, and Law no. 14344 of December 13th, 2007). In turn, scientific articles, patents, theses, and dissertations present the state of the art in the area of operation of the startups since they present the most recent scientific research and technologies that exist in their sector. The sources selected to consult theses and dissertations were the Digital Library of Theses and Dissertations of USP (BDTD-USP), the Brazilian Digital Library of Theses and Dissertations (BDTD), and the Networked Digital Library of Theses and Dissertations (NDLTD). For the patents, we selected the following sources: Derwent Innovations Index, Espacenet, and Google Patents.

The financial and market reports may be accessed through paid resources such as specialized journals and databases, through the websites of the companies themselves, or the Brazilian stock exchange website[14]. Besides the stock exchange website, we selected institutions that publish surveys related to the area of operation of the startups, such as Endeavor Brasil, as well as actual research such as the Side A Side B Startups study[15]. USP disposes of both general and specialized newspapers, journals, and books covering a broad spectrum of information to subsidize the decision-making by managers of startups and micro and small companies. Hence, we selected the following newspapers: *O Estado de S. Paulo*;

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[13] "O material rico, entretanto, conteúdo educativo mais extenso e aprofundado, com o objetivo de agregar valor e aumentar a autoridade da marca no assunto." (DRUBSCKY, [200-?]). DRUBSCKY, L. **Materiais ricos:** o que são e como escrever? [200-?]. Available in: https://comunidade.rockcontent.com/materiais-ricos-o-que-sao-e-como-escrever/. Acess: 22 ago. 2018.

[14] Available in: http://www.b3.com.br/pt_br/. Acess: 20 ago. 2018.

[15] Available in: http://www.sebrae.com.br/Sebrae/Portal%20Sebrae/UFs/SP/Pesquisas/lado A B startups.pdf. Access: 13 ago. 2018.

Folha de São Paulo; *Jornal do Empreendedor*; *Jornal da USP*; and *Valor Econômico*. Regarding journals, we selected the following specialized journals that present contents of interest to startups: Internext: *Revista Eletrônica de Negócios Internacionais*; RAI: *Revista de Administração e Inovação*; *Revista Gesto*; *Revista de Administração, Sociedade e Inovação*; *Revista de Gestão da Tecnologia e Sistemas de Informação*; *Revista Brasileira de Gestão e Inovação*; *Revista Organizações em Contexto*; *Revista Foco*; *Cadernos de Prospecção*; Journal of Financial Innovation; *Revista Brasileira de Inovação*; RISUS: *Revista de Inovação e Sustentabilidade*; *Revista Gestão e Desenvolvimento*; *Revista Sustentabilidade, Inovação & Empreendedorismo Tecnológico* (InSIET journal); International Journal of Innovation; and *Revista Gestão, Inovação e Tecnologias*. The books most focused on startups available at the EESC/USP Library are "The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company" by Steve Blank and Bob Dorf, and "Startup Weekend: How to Take a Company From Concept to Creation in 54 Hours" by Marc Nager, Clint Nelsen, and Franck Nouyrigat. The company websites or portals and the company/university/government websites may also be freely accessed since they do not require institutional access from the University. As examples, we mention the following university and government websites that will be included in the guide: the University of São Paulo, the University of Campinas, the São Paulo State University, the Brazilian Ministry of Science, Technology, Innovation, and Communications, the Brazilian Ministry of Education, the Brazilian Ministry of Treasury, and the Brazilian Ministry of Industry, Foreign Trade, and Services.

Online or electronic media databases are resources that present bibliographic records and/or access to the complete text of scientific articles, event works, books, and/or book chapters. Among them, we selected the following: Abstracts in New Technology and Engineering (ANTE), Business Source Complete, IEEE Explore, and Technology Collection. In turn, radio and television may also be accessed through the Internet since they do not depend on the physical presence of startup managers at the University. Hence, we defined the USP radio station (USP São Paulo 93.7 FM Radio Station and USP Ribeirão Preto 107.9 FM Radio Station), as well as USP IPTV as sources of interest to the startups. Finally, the government publications are also documents of free access that waive the institutional access from the University.

Organized per source type, the guide gathers a vast support material to all those interested in this theme, besides bringing the list of startups installed in São Carlos (SP, Brazil) up to July of 2018. This list is illustrative, since the dynamics of this type of organization yields constant changes, with the inclusion or exclusion of companies. The electronic version will contemplate the most appropriate update of the data.

4 Final Considerations

The city of São Carlos (SP, Brazil) has an environment favorable to entrepreneurship since it counts with education institutions and companies that foment entrepreneur initiatives. Of the entire infrastructure existing in companies, information is an essential element for decision-making by managers of startups and micro and small businesses. The studies consulted (PEREIRA, 2006; FONSECA, 2017) allowed identifying that the sources most relevant to such organizations remained practically the same, barring few exceptions that emerged due to the technological development in the eleven years that separate them. Hence, it was possible to identify sources with access restricted to USP and with open access for the composition of the guide. Each source will be categorized as primary, secondary, or tertiary, besides being accompanied by a brief description and indication of the form of access.

For being a project approved with a public notice that provides financial resources, the guide will be distributed in the printed and electronic formats. For the printed format, a printing company will be hired to produce 500 copies in size 15x21 cm, with this service including the creation of the cover, text revision, layout, and barcode. In turn, the electronic format will be made available in institutional portals of USP and disseminated by the EESC/USP Library through advertisements, newsletters, and social networks such as Facebook, Twitter, Instagram, and LinkedIn, widely used by such organizations. Posteriorly, it will also be distributed to universities, research institutes, technological parks, coworking spaces, and innovation ecosystems installed in São Carlos (SP, Brazil).

With this action, the University of São Paulo contributes to the national economic development through the opportunity of egalitarian access to scientific and technological quality information through the broad availability of its informational resources to the society that maintains it.

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