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KNOWLEDGE MANAGEMENT IN STARTUP ACCELERATORS: STUDY OF PROCESSES, PRACTICES AND INFORMATION TECHNOLOGY TOOLS USED IN BRAZIL

GESTÃO DO CONHECIMENTO EM ACELERADORAS DE STARTUPS: ESTUDO DE PROCESSOS, PRÁTICAS E FERRAMENTAS DE TECNOLOGIA DA INFORMAÇÃO UTILIZADAS NO BRASIL

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Abstract

One of the ways to streamline the generation and promotion of innovations is through startup accelerators. In these programs, startup accelerators use their own methodologies to provide startups with the knowledge they need to make the business scalable. The objective of this research is to identify and characterize the main processes, practices and tools of Information Technology (IT) used in the knowledge management of startup accelerators operating in Brazil. This is an exploratory-qualitative research that uses multiple case studies on five startup accelerators. Owners and managers were interviewed. Interviews with semi-structured script and documentary analysis of public records were adopted. The main processes and practices used by the accelerators analyzed were: spaces and events dedicated to the socialization of knowledge, knowledge mapping, development of mentoring actions, availability of in-person training with instructors and corporate portal. The main IT tools identified in the accelerators surveyed were: WhatsApp groups, virtual meetings and conferences, mobile phone, VOIP telephony, extranets, social networking and cloud computing. Startup accelerators have been found to use IT processes, practices, and tools to a greater or lesser extent. However, the consulted accelerators use these resources in isolation, almost unconnected with each other, which entails information/knowledge that risks being segmented without sharing with others involved in the organization.

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Resumo

Uma das formas de agilizar a geração e a promoção de inovações se dá por meio de aceleradoras de *startups*. Nesses programas, as aceleradoras de *startups* utilizam suas próprias metodologias para fornecer às *startups* o conhecimento necessário para tornar o negócio escalável. O objetivo desta pesquisa é identificar e caracterizar os principais processos, práticas e ferramentas de Tecnologia da Informação (TI) utilizados na gestão do conhecimento de aceleradoras de *startups* em operação no Brasil. Para tanto, foi executada pesquisa exploratória-qualitativa que utilizou estudos de caso múltiplos junto a cinco aceleradoras de *startups*. Entrevista semiestruturada e roteiro para análise documental de registros públicos foram adotados como instrumentos de pesquisa junto aos proprietários e gerentes das aceleradoras analisadas. Os principais processos e práticas utilizados pelas aceleradoras analisadas foram: espaços e eventos dedicados à socialização do conhecimento, mapeamento do conhecimento, desenvolvimento de ações de mentoria, disponibilidade de treinamento presencial com instrutores e portal corporativo. As principais ferramentas de TI identificadas nas aceleradoras pesquisadass foram: grupos de WhatsApp, reuniões virtuais e conferências, telefone celular, telefonia VOIP, extranets, redes sociais e computação em nuvem. Verificou-se que as práticas e ferramentas de TI voltadas à gestão do conhecimento são usadas, em maior ou menor grau, nas aceleradoras de *startups* pesquisadas. Entretanto, as aceleradoras analisadas utilizam esses recursos isoladamente, quase que desconectados uns dos outros, o que implica em informações e conhecimentos que correm o risco de ficarem isolados e sem compartilhamento com outros profissionais envolvidos na organização.

Palavras-chave: Gestão do conhecimento. Processo de gestão do conhecimento. Práticas de gestão do conhecimento. Startup.

Introduction

Companies are facing an increasingly competitive environment in the current business context that seeks greater responsiveness, notably through new products, services and processes. To this end, companies are increasingly relying on innovations as mechanisms of differentiation in today's uncertain and fierce markets. Knowledge as a business asset has been highlighted over the last years as one of the most important strategic resources in contemporary companies in new economic dynamics. Authors such as Drucker (1993) and Nonaka and Takeuchi (1995) in the 1990s already stated that the ability to create knowledge and use it efficiently could become important sources of a company's competitive advantage.

Considering that knowledge is also associated with human experience and social context, knowledge management (KM) seeks to stimulate creativity and provide the means for the result of people's creative process to be recorded, organized, disseminated, assimilated and used as a common good, because as they interact with their environments, people absorb information, transforming it into knowledge resulting from their experiences and values, as well as the company's internal rules (VILHA, 2013).

According to Liebowitz (2011), many organizations relate KM to innovation due to its ability to improve the organization's adaptability and agility in the markets, build an organizational memory regarding the amount of information produced and improve its internal and external effectiveness (LIEBOWITZ, 2011).

A way to streamline innovation generation and promotion is through incubators and startup accelerators. Thus, entrepreneurship or entrepreneurship skills stimulate the ability to perceive opportunities, take risks and innovate (VILHA, 2017).

Supporting startup entrepreneurs is the main objective of accelerators and incubators in the early stage of their business, being increasingly prevalent in the entrepreneurial environment as well as corporate innovation, and it is also active in structuring and operating the flow of external interactions with startups.

Lopes, Scavarda, Hofmeister, Thome e Vaccaro (2016) and Zemaitis (2014) observed that the search for external knowledge for innovation has been increasingly valued and used, thus reinforcing the importance of internalization and systematization of KM practices focused on companies' innovation.

In acceleration programs, startup accelerators use their own methodologies to provide startups with the minimum knowledge and structure to make their business scalable (COHEN *et al.*, 2019). In addition to financial support and connections with potential investors, a startups' biggest gain in acceleration processes is knowledge (COHEN; HOCHBERG, 2014).

The issue that guided this study is related to the investigation of the processes, practices and IT tools used in KM by startup accelerators operating in Brazil. So, the objective of this research is to identify and characterize the main processes, practices and IT tools used in for KM in startup accelerators operating in Brazil.

Theoretical framework

This section of the paper will address conceptions of the field of so-called Knowledge Management (KM). Then, KM processes, practices and tools are discussed. Finally, the action of startup accelerators is outlined.

Knowledge management

Today's companies are inserted in an increasingly competitive environment, thus needing to develop strategies to meet specific demands with fast, innovative and effective responses regarding products, services or processes. Knowledge, as an important intangible asset, has been gaining prominence as an important business resource over the last years. According to Sabbag (2007), knowledge is the processed information that enables action, that is, it is the sum or continuum of what was perceived, discovered or learned. Alavi and Denford (2011) describe that knowledge is created through cognitive processes, such as thought and learning.

According to Calhoun, Starbuck and Abrahamson (2011), all knowledge is imperfect and incomplete. The authors also state that, since change is constant, the evolution of knowledge is more important than existing knowledge, and therefore ideas and thoughts must always be adapted to continue with meaning. In the 1990s, authors such as Drucker (1993) and Nonaka and Takeuchi (1995) considered knowledge, and the ability to create and use it, as important sources of a company's competitive and sustainable advantage. However, today, many companies can no longer rely solely on internal areas for knowledge creation, as they now have access to new technologies and external knowledge to drive their growth (LOPES *et al.*, 2016). The knowledge is already recognized as an important strategic resource by the firms and the development of the knowledge management (KM) practices is being used to cope with the current dynamic environment (SANTORO *et al.*, 2019).

Thus, many companies have been implementing KM practices aimed at managing this important resource, especially for knowledge creation and sharing inside and outside the organization. These companies realize that it is very important to keep a constant information flow in order to foster the continuous process of knowledge absorption (ZEMAITIS, 2014).

A good definition of KM should incorporate knowledge perspectives on capture and storage, along with the intellectual assets that compose the organization (DALKIR, 2017).

Dalkir (2017) argues that KM is the deliberate and systematic coordination of an organization's personnel, technology, processes and organizational structure in order to add value through reuse and innovation. This is achieved by promoting the creation, sharing and application of knowledge, as well as by nurturing valuable lessons and best practices for corporate memory in order to promote continuous organizational learning.

Tidd and Bessant (2015) state that innovative companies grow at twice the speed (both in jobs and sales) compared to non-innovators. However, efforts to develop innovations in closed systems are no longer sufficient to serve the market. In the context of innovative processes, KM should retain and organize the lessons learned from the organizational mechanisms, mapping individual competencies, as well as the outcomes of threat and opportunity mapping mechanisms for building innovative competitive strategies, because they share the same goals (subsidize the company's innovation process) and complement the processes of creation, capture, synthesis, sharing and application of the collective intelligence of the organization (TERRA; ALMEIDA, 2010).

Regarding companies that develop innovations in partnership with external actors, increasing the flow of information and knowledge entering and leaving the company can contribute to increasing KM challenges as a basis for innovation. Therefore, it will be important to develop a knowledge-based approach (SCUOTTO *et al.*, 2017).

A well-designed process, as well as the use of IT practices and tools for knowledge resource management should support KM. The following are listed KM processes, practices and IT tools found in the literature relevant to innovation, given there are not many publications on the specific subject of KM in startup accelerators.

Knowledge management: processes, practices and IT tools

KM practices are the processes and activities that support the creation of organizational value through knowledge in the company, and may impact organizational structure, knowledge creation and sharing culture, learning mechanisms, and human resources management practices focused on information and practices, and knowledge protection mechanisms (KIANTO *et al.*, 2014). They can also be defined as organizational practices that use the efficient management of the organization's knowledge resources to achieve business objectives. In addition, the findings of Kianto *et al.* (2018), indicate that the implementation of KM practices generally enhance labor productivity. Inkinen (2016) categorizes practices into four dimensions, namely: a) human-oriented (e.g., culture, people and leadership); b) oriented on the organizational factor (e.g., processes and structures); c) oriented towards technology (e.g., infrastructure and applications); and d) oriented towards management (e.g., strategy, objectives and metrics). Among some practices and processes cited by Gaspar, Santos, Donaire, Kuniyoshi and Prearo (2016) are: career plans, coaching, mentoring, practice community, area for knowledge management/spaces dedicated to knowledge socialization, face-to-face training with instructors, knowledge multipliers, storytelling, skills/knowledge/process mapping, repository of lessons learned/best practices, expert networks, stated knowledge management strategy/policy and competency management, among others.

Information Technology (IT) can facilitate knowledge sharing, and some of the tools used focus on communication (online forums, chats, etc.), collaboration systems, video conferencing, social networking, wikis and blogs (GIUDICE; PERUTA, 2016). In the scientific literature, it is possible to find different IT tools aimed at supporting KM, such as frameworks, social networks, information storage (INKINEN; KIANTO; VANHALA, 2015), groupware systems, intranet, extranet, decision support systems, and document management systems (CUPIAL *et al.*, 2018). More recent tools in organizational life can also be found, such as Web 2.0/3.0, collaborative technologies 2.0, Wikis and internal blogs (SOTO-ACOSTA; CEGARRA-NAVARRO, 2018). Costa and Martins (2017) showed the use of Virtual Social Networks (e.g., Facebook, Skype, WhatsApp, Youtube, etc.) for KM support in organizations in their research.

Santos (2016) concluded in his research that KM practices, in conjunction with cloud technologies, could offer several benefits and contributions to KM in organizations, such as computer virtualization, which facilitates work from any mobile device without the restriction of certain equipment.

The benefits of KM processes, practices and IT tools have already been demonstrated, however, many of the studies regard their applications in more conventional companies or institutions, with few studies addressing the actors of innovation, such as startup accelerators.

Startup accelerators

Innovation habitats are a new trend in the effort to foster entrepreneurship. These spaces offer entrepreneurs support for their startups so that new ideas and new business proposals can effectively be transformed into successful companies.

These innovation habitats are referred to in academic literature as business incubators, technology parks or business accelerators.

The study conducted by Hallen, Bingham and Cohen (2016) based on mixed empirical methods that triangulated with various qualitative and quantitative samples, indicated a positive effect of accelerators on startups in organizations, mainly through learning during acceleration processes and follow-up procedures. Furthermore, the authors also provided consistent evidence that many of the surveyed accelerators actually benefited startups and increased the likelihood of achieving results, as well as increasing the speed to achieve them.

Cohen and Hochberg (2014) define startup accelerators as group-based startup programs that include mentoring and educational components employed on behalf of these early-stage companies. The authors differentiate them from incubators in some specific requirements and characteristics, such as duration and adopted business model.

For the Brazilian Startup Association (2017), startup accelerators can be understood as organizations that support and invest in the development and expansion of companies with innovative concepts. To achieve the goal of leveraging business, the accelerator provides, in addition to financial support, coaching/mentoring activities to startups for business success. Thus, accelerators are organizations that help the transition process from pre-startups to startups.

Startup accelerators are primarily aimed at supporting entrepreneurs in the early stages of business and have become an important support tool for providing the right environment in which innovation can grow better than in the slow and bureaucratic organizational environment (CHESBROUGH; WEIBLEN, 2015).

The acceleration practices of early stage startup accelerators represent a beneficial form of entrepreneurial intervention (HALLEN *et al.*, 2016) as they enable the entrepreneurial spirit of small startups to be combined with the scale and scope of large and established organizations (COHEN, 2014). Startup accelerators have become prominent actors in today's entrepreneurial environment in areas such as agribusiness, technology, automation, energy, health, environment and finance, etc. (FLOR *et al.*, 2016).

In Brazil, information on the number of accelerators is not accurate and hard to find. There are also problems with the lack of criteria for typifying an accelerator. Miller and Bound (2011) proposed the following characteristics:

- An open and highly competitive application process;
- Provision of early investments, usually in exchange for equity;
- Focus on small teams rather than individuals;
- Limited time support, including scheduled events and intensive tutoring;
- Startups cohorts or 'classes'.

Method and materials

This is an exploratory-qualitative research using the multiple case study research method (YIN, 2015; MARCONI, 2017; DENZIN; LINCOLN, 2018). In the context considered in this research, the exploratory approach addressed a recent variable in studies that regards KM in startup accelerators.

A multiple case study was conducted in five startup accelerators with the owners and managers of these organizations applying KM. The multiple case study was chosen to facilitate the understanding of the matter within different organizations.

Seven accelerators were contacted, however, only five were included, three from São Paulo, one Rio Grande do Sul, and one from Santa Catarina. Each will be described in more detail in the next chapter.

As for the research instruments employed, interviews with semi-structured script and documentary analysis of public records were adopted (KUMAR, 2011). The semi-structured interview was chosen, since it gathers the opinion of professionals who are familiar with the subject matter, capturing and understanding their motivations about the process, practices and tools of KM in organizations.

Semi-structured interviews were conducted in five startup accelerators, notably for application to the owners or managers with decision-making power in each organization.

The semi-structured interview script comprised two parts: the first with open-ended questions that sought to understand how startup accelerators create and transfer knowledge and measure its success; and the second part with a table showing the options of the main IT processes, practices and tools used to indicate the frequency of use (‘always’, ‘often’, ‘sometimes’, ‘rarely’, and ‘never’), as well as their degree of importance (from 1 to 5, with 1 being the lowest and 5 the highest degree of importance), even when not in use on the accelerator.

In addition to bibliographic research and interviews, documentary analysis of public and/or private records was also included. Information and statistical data available on the Internet was reviewed, as well as materials provided by startup accelerators.

The answers of the interviewed subjects were transcribed and its content analyzed using the Bardin's (2011) technique, thus seeking to better understand the phenomenon studied from the objectives formulated in this research.

Result analysis

Brief description of startup accelerators surveyed

Startup accelerator A

It was founded in the year 2011 and based in the city of São Paulo. This accelerator program proposes to invest up to R$ 180 thousand for up to 5% equity, however final amounts depend greatly on the expected financial return. They offer access to large companies and co-working spaces, and invest in all markets that use technology in an innovative way. The number of accelerated startups totals 301. The respondent is in charge of acceleration coordination, and has direct contact with startups in these processes.

Startup accelerator B

Founded in 2012, this accelerator is based in the city of Santa Barbara d'Oeste. Their investments depend on the business and so there are no predefined values. Their *modus operandi* differs from accelerator A in that they work not with ownership interest, but rather with the 12% retention of startup revenue in the acceleration period, which lasts twelve months. In the acceleration process they offer training in methodologies, analysis of investment profiles, and access to connections with potential investors. Preferred areas of activity are creative economy, industrial innovation, and agribusiness. Thirty-five (35) startups have already participated. The interviewee owns the accelerator.

Startup accelerator C

Founded on the year 2012, it based in the city of São Paulo and offers access to investments, mentoring, and process methodologies. They can also provide financial support, but only for companies in the growth phase of up to R$ 150 thousand for 10% equity. Preferred investment areas are fintech, agrotechs, legaltechs (companies that develop solutions focused on the legal market), insuretechs, martechs (marketing technology solutions), logistics solutions and SaaS B2B. The accelerator already totals 224 startups. The interviewee holds the position of Chief Technology Officer (CTO), whose responsibility is to provide technological support for the program.

Startup accelerator D

The accelerator was founded in 2013 and has its headquarters in the city of Porto Alegre. It seeks to invest up to R$ 250,000 for up to 12% equity. They offer personalized business coaching, access to a mentor contact network, as well as space and infrastructure. The areas of investment are: B2B in agrotech markets (agriculture/agribusiness technology), health, education, fintech, industry, retail and insuretech. They can also evaluate B2C solutions. It totals 57 accelerated startups. The interviewee holds the position of acceleration coordinator, who has direct contact with startups in the acceleration processes.

Startup accelerator E

Founded in 2015, it is based in the city of Florianopolis (SC) and aims to invest $ 200,000 in exchange for 7% equity. In addition to financial capital, they offer: mentoring, connections, tools and services, and administrative support. They look for big data startups (startups with solutions focused on data analysis, capture, curation, research, sharing, transfer, visualization and privacy), fintech (startups with solutions related to the financial market, such as new business in payments, investments, loans, regulation, etc.), insurance (startups with solutions for the insurance industry that seek to improve risk analysis, offer more customized products and facilitate insurance), and IT and Telecom (startups with solutions in communication, telephony, process efficiency, service platforms/customer relationships and IT in general). It has accelerated 30 startups. The interviewee

has the position of people manager, whose objective is to provide psychological support for people to perform better and faster, both with the internal team and startup entrepreneurs.

Consolidated profile of startup accelerators surveyed

The startup accelerators considered in this research are between 3 and 7 years old. The number of startups accelerated by them varies between 30 and 301 enterprises. However, such indicators are not directly related, that is, it does not mean that those with the longest time in the market are necessarily those with the most accelerated startups.

The accelerators analyzed use their own nomenclature for investment areas, as some of them are more structured, while others are broader, regardless, they all search for startups with innovative technological solutions.

Consolidation of process results and KM practices of accelerators surveyed

Three of the startup accelerators analyzed already use different KM processes and practices in their activities, albeit in an unstructured manner (except for one). Each accelerator's way of working determines, in the respondents' opinion, the respective KM processes and practices that best suit the needs of the accelerator.

The processes and practices used by all accelerators except for C are:

- Spaces and events dedicated to socialize knowledge (with startup).
- Knowledge mapping (internal team).
- Development of mentoring actions (career development mentoring) for the formation of leaders focused on knowledge management (or not).
- Providing in-person training with instructors (with startup).
- Corporate or departmental portal.
- Knowledge maps.

The processes and practices that all accelerators indicated they NEVER used and are of low importance (1) are: Call Center/Help desk, and internal yellow pages.

Startup accelerators play an important role in stimulating entrepreneurship (Pauwels, Clarysse, Wright & Van Hove, 2016, Hallen *et al.*, 2016) and include mentoring and monitoring startups' maturity, which increases their chances of success in providing new technology or service. Kurtz (2011) stresses the importance of understanding how knowledge flow takes place in the organization, considering its internal and external context. Thus, it seeks to identify the format of collaboration and which shared knowledge is relevant between company members and other actors in their operating environment.

The use of unstructured KM processes and practices was detected in this research. The processes and practices did not have the information integration nor an organization like the categorizations indicated by Inkinen (2016), which is classified into four factors (human, organizational, technological and process management); or according to the classification proposed by Kianto *et al.* (2014) regarding organizational structure, knowledge creation and sharing culture, learning mechanisms, knowledge-focused human resources management practices and knowledge protection practices.

Chart 1 summarizes the processes and practices found in the field research performed, correlating them with the authors named in the theoretical framework.

Chart 1: KM practices and processes cited in literature and research findings

Authors on KM management		KM processes and practices	Accelerators used
Inkinen (2016)	Kianto et al. (2014)		
		Career plans	Accelerators E
Human factor oriented (culture, people and leadership)	Culture of knowledge creation and sharing	Coaching	Accelerators A, B, C and D
		Mentoring	Accelerators A, B, C, D and E
		Practice community	Accelerators A, C, D and E
	Knowledge-focused human resources management practices and practices	In-person instructor training	Accelerators A, B, C, D and E
		Knowledge multipliers	Accelerators C and E
		Story telling	Accelerators A, C and E
Organizational factor oriented (processes and structures)	Organizational structure	Skills mapping	Accelerators C and E
		Knowledge mapping	Accelerators A, C, D and E
		Repository of lessons learned	Accelerators C, D and E
		Repository for best practices	Accelerators C, D and E
		Processes mapping	Accelerators B, D and E
Technology-oriented (infrastructure and applications)	Learning mechanisms	KM area	Accelerators C
		Expert networks	Accelerators B, C, D and E
		Spaces dedicated to knowledge socialization	Accelerators A, C, D and E
Process management factor oriented (strategy, objectives and metrics)		KM declared strategy	Accelerators C
		KM declared policies	Accelerators C
		Competency management	Accelerators B, C and E
		Corporate communication KM	Accelerators C, D and E
		Knowledge benchmarking	Accelerators A, D and E

Source: research database.

Consolidation of KM-driven IT tools results from accelerators surveyed

The analyzed startup accelerators use IT tools for KM, yet in an unstructured manner. The main IT tools identified as frequently used (always) and used by all accelerators (except accelerator C) are:

- WhatsApp or other groups in a specific company and/or department.
- Virtual meetings and conferences (with startup).
- Mobile phones.
- Other means of telephony (e.g., Skype).
- Extranet.
- Social networks.
- Cloud services.

The importance of IT tools found in field research is supported by the arguments of Giudice and Peruta (2016), who indicate their use in knowledge sharing in companies. Inkinen *et al.* (2015) also recommends them for KM processes in the organization. Other IT tools that were primarily created for virtual socialization purposes are also being used for KM, as indicated in studies by Soto-Acosta and Cegarra-Navarro (2018) and Costa and Martins (2017). Cloud technologies can offer many benefits such as the ease of work from any mobile device (SANTOS, 2016).

Next, Chart 2 correlates the KM-oriented IT tools cited by the authors with those used by startup accelerators analyzed in this research.

Chart 2: Correlation between the KM-oriented IT tools cited in the literature and the research findings.

IT tools	Used accelerators	Authors
Chats	Accelerator C	Giudice and Peruta (2016)
Collaboration systems	Accelerator C, D and E	Giudice and Peruta (2016); Soto-Acosta and Cegarra-Navarro (2018)
Video conferences	Accelerator C, D and E	Giudice and Peruta (2016)
Social networks	Accelerator C, D and E	Giudice and Peruta (2016); Inkinen et al. (2015); Costa and Martins (2017)
Blogs	Accelerator A, B, C and E	Giudice & Peruta (2016); Soto-Acosta & Cegarra-Navarro (2018)
Groupware systems	Accelerator A, C and D	Cupial et al. (2018)
Intranet	Accelerator C, D and E	Cupial et al. (2018)
Extranet	Accelerator C, D and E	Cupial et al. (2018)
Decision support systems	Accelerator D	Cupial et al. (2018)
Web 2.0 / Web 3.0	Accelerator C and E	Soto-Acosta and Cegarra-Navarro (2018)
Cloud technologies	Accelerator A, C, D and E	Santos (2016)
WhatsApp	Accelerator A, C, D and E	Costa and Martins (2017)

Source: research database.

Conclusion

Today's companies are inserted in an increasingly competitive environment, thus needing to develop strategies with fast, innovative and effective responses to products, services or processes developed. Knowledge, as an important intangible asset, has been gaining prominence as a business resource over the last years.

Innovation and its management within the company itself are no longer enough to promote the competitiveness needed to stay in the market. Thus, one of the solutions found across company boundaries is that startups focus more on innovation and are open to new knowledge.

Knowledge has emerged as an important intangible asset, and as regards startup accelerators, it is one of the key features, especially in terms of their interaction with company-accelerated startups. Thus, knowledge management acts as a key factor for the composition of the organization's competitive and strategic advantage.

Considering the importance of startup accelerators for innovation and KM as a strategy for enabling competitive advantages, the general objective of this research was to identify and characterize the main IT processes, practices and tools used in KM by Brazilian accelerators.

Five accelerators from two different geographic regions of the country participated in the survey, responding to a research instrument designed as a semi-structured interview with owners and managers, in addition to analyzing available documents.

Three of the five accelerators analyzed were found to make a more emphatic use of different IT processes, practices and tools aimed at KM.

KM practices indicated by all respondents (except for the startup accelerator C) were: knowledge mapping, spaces and events dedicated to knowledge socialization, mentoring, classroom training, and the corporate/departmental portals.

As for IT tools for KM, WhatsApp or similar group chats, virtual meetings and conferences, mobile phone, other telephone services (e.g., Skype), extranet, social networking, and cloud computing services were the most cited by all respondents (except for startup accelerator C).

On a consolidated basis, startup accelerators have been found to use IT processes, practices and tools to a greater or lesser extent. However, four of the five accelerators consulted use such resources in isolation, which results in information that risks being segmented, i.e., unconnected with other areas or startups involved in the organization. Raising awareness about the best ways of sharing this knowledge among people on accelerator teams is relevant. This could bring many benefits, such as avoiding research or work on topics that have already been addressed or solved in another area or professional company.

This research has contributed to academic literature on a little explored topic about KM in startup accelerators. Previous research addresses the themes that compose this research, yet separately. There are few studies correlating KM and innovation in startup accelerators, a topic of great relevance for contemporary organizations. Thus, these results constitute an important contribution to practicing professionals (in this case, within startups and accelerators), who can better apply the various IT processes, practices and tools aimed at KM that are used by the accelerators analyzed in this study.

A research limitation is the fact that the analysis included only five startup accelerators, which represents 14% of the total of 35 accelerators in Brazil (ABREU; CAMPOS, 2016), notwithstanding, four of them ended their activities after the research. Another limitation to be mentioned is that the five accelerators surveyed operate only in the South and Southeastern regions of the country. Therefore, the results and conclusions cannot be generalized to all accelerators operating in Brazil.

As a suggestion for future research, it is recommended to study the accelerators from other regions of the country (North, Northeast and Midwest), as well as to study the impact of KM on accelerators' innovation environment. Research mentioned that KM brings financial benefits to company business. We also suggest a similar study, yet focused on startup incubators promoted by different organizations operating in the country.

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