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The use of knowledge management practices by Brazilian startup companies

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Abstract

To be competitive in current knowledge economy, startup companies should effectively use available knowledge to implement their development strategies. Consequently, it is necessary to identify which knowledge management (KM) practices are used by startup companies. This paper aims to identify KM practices used to overcome critical factors of startups' development in Brazil. It will be discussed the relation between the critical factors of startup development and the KM practices used. Interviews were conducted with startups established in business incubators in the southern region of Brazil. Results demonstrated that the main KM practices used to overcome critical factors of startup development – Opportunity Recognition, Entrepreneurial Commitment, Credibility and Sustainability – are related to company's internal knowledge. Internal knowledge is a company asset, which includes not only R&D activities but also its actions and routines. An important remark was that even though startups are not aware of KM practices, they have organized routines and standards aligned with current KM theories.

Keywords: Knowledge management; Startup companies; Brazil

Introduction

The development of innovative products and processes has driven the development of companies through the years. Big and small companies have applied different practices to keep competitive in the market, creating research and development routines to guide incremental or radical renovation of their portfolio (Parrilli & Elola, 2012). This renovation process is usually developed through innovative activities, driving companies ahead of their competitors since they will be pioneers in launching new products or services, obtaining improvements in both productivity and profit (Tsai & Li, 2007).

Considering that the development of innovative products and processes is an advantage for companies (Baumol, Litan, & Schramm, 2007), and that small companies may have some advantage in launching innovative products (Christensen, 2013; Criscuolo, Nicolaou, & Salter, 2012), fostering the creation and development of technology-based companies (startups) could be an alternative to a productive structure that struggles to develop innovation. In emergent countries such as Brazil, where only 5.7% of established companies have developed a new product or process nationally or internationally (IBGE, 2013), stimulating the creation of high-tech startups may be one alternative to foster social–economic development.

Adding to this, considering the current economic crisis Brazil is facing, the discussion about entrepreneurship and the creation of start-ups may be a good alternative to deal with high unemployment rates. This is true considering the relevant role of micro and small enterprises for economic growth. According to GEM - Global Entrepreneurship Monitor report (2016), 55.5% of the Brazilian population considers interesting the idea of starting a new company in the region they live in. This percentage is higher when compared to US and Mexico. In this context, it is important to promote the creation of start-up companies,

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discussing which are the best management practices to sustain its development.

Analyzing the role of startups in the development of innovative products and processes, we try to put together two issues related to the ability of startups to generate innovation. On the one hand, the use of knowledge management practices in the process surrounding the creation and development of high-technology startups. To foster the establishment of new startups, it is necessary to define processes to create and maintain knowledge in these companies. As defined by Tsai and Li (2007), new companies must effectively use the available knowledge to formulate and implement development strategies. On the other hand, the need to overcome critical factors that influence the development and sustainability of startup companies. The development of small companies is a survival and growth race (Sapienza, Parhankangas, & Autio, 2004) and the organization of knowledge management practices in which existing knowledge is evaluated and new knowledge is acquired to sustain companies' development may overcome critical development factors.

Analyzing these two issues, some articles were identified discussing the development of startup companies (De Cleyn & Braet, 2010; Gomes, Salerno, Fleury, & Saraiva Junior, 2015), acquisition of external knowledge (Presutti, Boari, & Fratocchi, 2007), knowledge management related to firm performance (López-Nicolás & Meroño-Cerdán, 2011; Mills & Smith, 2011) and creation of knowledge in startups (Tsai & Li, 2007) and high-tech manufacturing firms (Kao, Wu, & Su, 2011), and the development of e-learning tools to integrate knowledge management (Pohthong & Trakooldit, 2013). However, we were not able to identify articles that described which knowledge management practices were involved in the creation and development of startups.

Aiming to fill this gap in the literature, this article intends to identify the knowledge management practices used to overcome the critical factors of startup companies' development. The research model considered the critical factors of startup development described by Vohora, Wright, and Lockett (2004), in addition to new articles which have revised these factors (De Cleyn & Braet, 2010; Furlan & Grandinetti, 2014; Holland & Garrett, 2015; Rasmussen, 2011). Regarding knowledge management, the review of knowledge management practices of Baskerville and Dulipovici (2006) was used, in addition to other articles which analyzed these practices and the relation of knowledge and firm performance (Audretsch & Keilbach, 2007; Bembenek & Piecuch, 2014; Bender & Fish, 2000; López-Nicolás & Meroño-Cerdán, 2011; Mills & Smith, 2010; Mosconi & Roy, 2013; Naicker, 2013; Warren, Patton, & Bream, 2009).

Based on these two articles, an exploratory case study was conducted with startup companies established in business incubators in the southern region of Brazil. As a result, it was observed which knowledge management practices were described in relation to critical factors of startup development. A summary of these relations were presented as a result of this research, which may contribute to the current discussion about startup development (Furlan & Grandinetti, 2014; Rasmussen, 2011).

In sections '*critical factors in the development of startup companies*' and '*knowledge management practices*' we will review the critical factors of startup development and knowledge management practices, respectively. In section '*research method*', we will present the method used in the research, followed by the results in section '*results*' and final considerations in section '*final remarks*'.

Critical factors in the development of startup companies

The development of startup companies does not follow a linear path (Rasmussen, 2011). Unpredicted events or even improvements in business plan and technology exploration may alter time to market and performance (Brinckmann, Grichnik, & Kapsa, 2010; Holland & Garrett, 2015). As mentioned by Druilhe and Garnsey (2004), startups modify themselves while in development, refining business models and redefining opportunities.

However, there are critical factors that influence the development and sustainability of startup companies (O'Shea, Chugh, & Allen, 2008; Vohora et al., 2004). These factors arise during the company's learning process, in which the existing knowledge is insufficient for its development, being necessary to add more knowledge. Consequently, from time to time the startup company must review decisions and strategies previously defined, complementing its knowledge background (Rasmussen, Mosey, & Wright, 2011; Vohora et al., 2004). These critical factors are defined by four categories: Opportunity Recognition; Entrepreneurial Commitment; Credibility; and Sustainability, as described below.

- *Opportunity Recognition:* It is the first step of a startup based on a research spin-off – to recognize the business opportunity of its technology. The company's scientific knowledge is fundamental at this stage as it allows the development of technology focused on market opportunities. Several studies point out the lack of entrepreneurial knowledge among scientific researchers (Audretsch & Keilbach, 2007; De Clercq & Arenius, 2006; Markman, Gianiodis, & Phan, 2008; Van Burg, Romme, Gilsing, & Reymen, 2008; Wright, Lockett, Clarysse, & Binks, 2006), which is a critical factor as far as the beginning of the company is concerned. In order to overcome this factor, it is necessary to obtain enough market knowledge to identify an opportunity, which in some cases is done by external consultants (Lockett, Siegel, Wright, & Ensley, 2005; Van Burg et al., 2008).
- *Entrepreneurial Commitment:* After starting the startup company, the expectation of its success or failure may influence the commitment of the entrepreneur (Holland & Garrett, 2015). Vohora et al. (2004) state that there is huge uncertainty and risk involved at this stage of company development. Thus, entrepreneurs' commitment is necessary for the organization of internal resources, facilitating the learning process (Holland & Garrett, 2015; Lee & Jones, 2008). These resources include the necessary commitment for

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