NSA	National Security Agency
OECD	Organisation for Economic Co-operation and Development
OSZE	Organisation für Sicherheit und Zusammenarbeit in Europa
PKGr	Parlamentarisches Kontrollgremium
PNR	Passenger Name Record
PPP	Public-Private Partnership
SIGINT	Signals Intelligence
SIT	Strategische Initiative Technik
SWP	Stiftung Wissenschaft und Politik
TA	Technische Aufklärung
TFTP	Terrorist Finance Tracking Programme
TKÜ	Telekommunikationsüberwachung
TTIP	Transatlantic Trade and Investment Partnership
UP KRITIS	Umsetzungsplan für (kritische) Infrastrukturen
VN	Vereinte Nationen
VSBM	Vertrauens- und sicherheitsbildende Maßnahmen
WEF	World Economic Forum
WSIS	World Summit on the Information Society
ZKA	Zollkriminalamt

Lektüreempfehlungen

Annegret Bendiek/Christoph Berlich/Tobias Metzger
Die digitale Selbstbehauptung der EU
SWP-Aktuell 71/2015, August 2015
Christian Schaller
Internationale Sicherheit und Völkerrecht im Cyberspace
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Open Innovation with digital startups using Corporate Aceelerators – A review of the current state of research

Paul Jackson/Nancy Richter/Thomas Schildhauer

Key Messages

Corporate accelerators are organisational devices which are designed to bring innovative start-up companies, with specialist knowledge, energy, skills and ideas together with the experience, funding, facilities and guidance of established firms. Increasingly, large companies are viewing startups as potential solutions for the development of innovations which will be of use in their marketplaces and for their organisational purposes. This paper is designed to review the existing literature and outlines the key characteristics of corporate accelerator programs. Further it examines if corporate accelerator programs are appropriate instruments for open innovation activities of established firms.

Introduction

Looking at the firm as the unit of analysis open innovation has become a crucial issue for sustainable growth and long term survival of business (World Economic Forum 2014). Besides an open innovation strategy the main enablers for organizational renewal and growth through innovation are either external by mergers and acquisitions, or internally by organic growth (Gassmann, Enkel 2006). In the case of mergers and acquisitions firms acquire other companies that offer new products or technologies. Internal growth is based on conducting research and development in order to establish new lines of business. Both innovation strategies require high equity or debt financing (World Economic Forum 2014).

For these reasons open innovation has become an important strategy for established firms (Chesbrough 2004). Firms increasingly tend to spend less on research and development (R&D) and seek to outsource the creative function by bringing in partners and spinning out research. Accelerators are important instruments for facilitating this relationship between established companies and startups. Accelerators are programs specifically developed to move startups from a business idea to commercialisation as rapidly as possible (Miller & Bound, 2011). Accelerators invite or select small groups of entrepreneurs and startups (from within or from outside the established organization) to compete in "boot camps" or "hackathons" and provide resources, education, mentoring and access to industry networks during these fixed-term events. They can be used under varying circumstances to gain "seed" funding for an independent startup, reduce search costs for potential investors, to speed up business development, or by established firms as a boost to innovation. This concentration of resources and expertise into a time-bound disciplined business development process allows a more rapid recognition of promising business ideas.

The objective of this paper is to capture the current status in research, to outline the key characteristics of accelerator programs and to find out if corporate accelerator pro-

grams are appropriate instruments for open innovation activities of established firms. Because corporate accelerators are a subset of accelerator programs, in this paper we review and identify gaps in the accelerator literature which also apply to corporate accelerators, as well as those questions that specifically pertain to corporate accelerators.

Accelerator programs

Accelerator programs are usually characterised by an open application process in which anyone with a business idea can apply. Most applicants are startup teams, young, growth oriented digital businesses that aim to produce rapidly scalable business models. (Blank & Dorf, 2012). The organisation conducting the accelerator invests in such companies, typically in exchange for equity, at pre-seed or seed stage. For Hochberg, Cohen, and Fehder (2014) an accelerator is a "*fixed term, cohort based program including mentorship and educational components and culminates in a public pitch event or 'demo day'*" (p. 4). Not all of these characteristics seem to be critical for defining accelerator programs. However, their most important difference to other collaboration programs is that they always seek to speed up the early stages (and recently also the later stages for startups with a proven track record (Clarysse, Wright, and VanHove 2015) of the business startup process, identifying and weeding out business ideas that are unlikely to succeed or scale up.

When an established company uses an accelerator to achieve some desired business outcome, either through engaging the services of another organisation or managing it internally, we call this a "corporate accelerator" (Hochberg, 2015, p. 25). Examples of corporate accelerators are Disney Accelerator (Techstars),[1] Microsoft Ventures Accelerator Tel Aviv,[2] Kaplan Ed Tech Accelerator (Techstars),[3] Axel Springer Plug&Play,[4] Barclays Accelerator (Techstars),[5] Wayra IE or DE,[6] Nike+ Accelerator (Techstars)[7] and ProSiebenSat.1Accelerator.[8] Corporate accelerators are used to "grow and manage portfolios of complementary startups to accelerate innovation and gain a competitive advantage" (Dempwolf, Auer, & D'Ippolito, 2014, p.22). Their key objectives include accelerating innovation at a faster rate than is possible within the firm, finding next generation (or "over-the-horizon") products or threats to existing products, creating a new market ecosystem for products, developing partners and service providers and extending growth options by taking a share in new companies.

However, from a more critical perspective, we might also frame corporate accelerators as a managerial response to the new social and economic realities of the late 1990's. These celebrated creativity as the new driver of western economies, hyped-up "the rise of the creative class" (Florida, 2002) and announced a "new business order" in which startups turn society on its head (Giesa & Schiller-Clausen, 2014). This promise of self-determination, peer-peer networks, self-fulfilment and innovation (e.g. Boltanski and Chiapello (2006)) cannot conceal the precarious economic situation and risk-taking of many young entrepreneurs, who compete in high-pressure "breeding units" and give established companies the chance to "outsource" the creative function. These companies profit from an endless supply of highly-motivated and capable workers, perhaps cracking Peter's conundrum: "*How is it that you have the most enthusiastic, most committed, most talented group of employees – except for the eight hours a day they work for you*?" (Dale & Burrell, 2008, p. 117).

Significance of accelerator programs

Hochberg et al's (2015) ranking of US accelerator programs has risen from 10 in 2010-2011 to 200 in 2015, underscoring the demand for such services and their prima facie credibility as successful creators of new business. YCombinator, started in Silicon Valley in 2005, is perhaps the oldest[9] and best-known[10] accelerator program. Other accelerator programs such as Techstars in Boulder/Colorado or Seedcamp, both founded in London in 2007, have risen in popularity in the US and Europe and attracted a large network of peers around the world (P. Miller & Bound, 2011). These successful programs serve as role models for companies in many different industries. Due to the strong similarities between seed, startup and business accelerators and the specific phenomenon of corporate accelerators our literature review includes any kind of accelerator program.

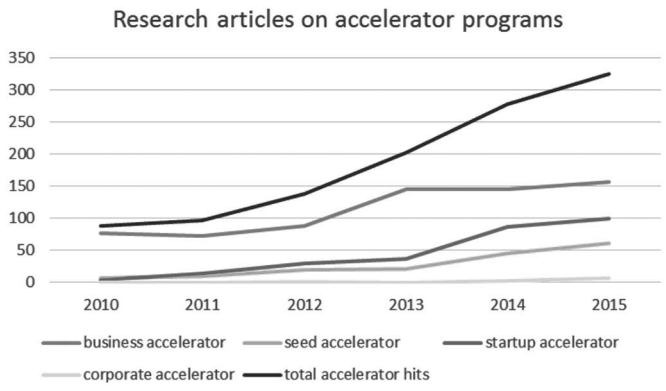
Methodology

To better understand the use of corporate accelerators by organizations, this paper reviewed articles published about accelerators between 2010 and 2015 and which were listed in Google Scholar. Google Scholar was used because accelerators still do not appear in scholarly databases such as EBSCO, Science Direct or Wiley. Furthermore, papers about accelerators often include working papers, conference papers and master and doctoral theses, which are usually not available in scholarly databases. In order to capture this early state of research on accelerators we included diverse publication formats in our review.

As seen in Figure 1, between 2010 and 2015 the number of publications on "business accelerators", "seed accelerators", "startup accelerators" and "corporate accelerators" directly and indirectly dealing with these subjects has risen significantly. Although, the number of publications on "corporate accelerators" is still very small, it has grown from 3 in 2014 to 7 in 2015.

1 http://disneyaccelerator.com/.
2 https://www.microsoftventures.com/locations/telaviv.
3 http://kaplanedtechaccelerator.com/.
4 http://www.axelspringerplugandplay.com/.
5 http://www.barclaysaccelerator.com/#/.
6 http://wayra.co/en.
7 http://www.nikefuellab.com/.
8 https://www.p7s1accelerator.com/en/home/.
9 Selection of first batch of eight YCombinator ventures was in 2005 in Mountain View.
10 Validation of the program has come with a blanket offer from two investors to invest $150.000 in every venture in the most recent batch in 2011.

Fig. 1: Research articles, directly and indirectly dealing with accelerator programs (Google Scholar 2010-2015)



Review results

Classifying Publications

We classified research publications as books, book chapters, conference papers, journal papers, reports, thesis and working papers. This classification demonstrates the still modest volume of scientific articles in the area of accelerator programs. A Google search conducted in September 2015 for content created between 2010 and 2015 reveals:

- 98,200 hits for "business accelerator"
- 8,800 hits for "seed accelerator"
- 114,000 hits for "startup accelerator"
- 1,590 hits for "corporate accelerator"

However, there are still only few peer-reviewed research papers dealing with the phenomenon. From 2010 to 2015 most of the almost 90 papers directly dealing with "accelerators" are journal papers (22 papers), student and doctoral thesis and working papers. The journals are generally not classified amongst the top-rated technology and innovation management journals (see table 1). These articles are listed in Table 1.

Table 1: Journal articles dealing with accelerator programs, 2010-2015

Bernthal, B. (2015). Investment Accelerators. *Stanford Journal of Law, Business, & Finance (forthcoming)*.
Chen, Y.-h., Wang, Y.-q., & Du, H.-j. (2010). Research on Reasonable Combination of Business Accelerator and Venture Capital [J]. *Scientific Decision Making, 4*, 006.
Dey, P. (2012). Rapid Incubation Model for the development of Micro and Small enterprises in Sub-Saharan Africa. *Global Journal of Management And Business Research, 12*(10).
Hallen, B.L., Bingham, C.B. and Cohen, S. (2014). Do Accelerators Accelerate? A Study of Venture Accelerators as a Path to Success? *Academy of Management Proceedings* 2014:1, 12955.
Hochberg, Y. V. (2015). Accelerating Entrepreneurs and Ecosystems: The Seed Accelerator Model *Innovation Policy and the Economy, Volume 16*: University of Chicago Press.
Huojie, Y., & Shuhua, Z. (2013). The rise of business accelerator network and its governance structure. *Science Research Management, 10*, 002.
Isabelle, D. A. (2013). Key Factors Affecting a Technology Entrepreneur's Choice of Incubator or Accelerator. *Technology Innovation Management Review, 3*(2).
Kelley, D. J., Ali, A., Brush, C., Cole, M., Corbett, A. C., Daniels, C., Rogoff, E. G. (2014). Global Entrepreneurship Monitor 2014 United States Report: Babson College.
Kousari, A. (2011). New Solutions to the Funding Dilemma of Technology Startups. *Open Source Business Resource*(June 2011).
Pietrasieński, P. (2013). Silicon Valley Acceleration Center-a Case Study of the First Polish Governmental Bridge Organization. *Przegląd Organizacji*(8), 54-60.
Radojevich-Kelley, N., & Hoffman, D. L. (2012). Analysis of accelerator companies: An exploratory case study of their programs, processes, and early results. *Small Business Institute® Journal, 8*(2), 54-70.
Regmi, K., Ahmed, S. A., & Quinn, M. (2015). Data Driven Analysis of Startup Accelerators. Universal Journal of Industrial and Business Management 3(2): 54-57.
Ren, J., & Zhong, S.-h. (2010). Countermeasures to the development of business accelerators in China. *Science-Technology and Management, 6*, 021.
Ren, J., & Zhong, S.-h. (2010). On the Operating Patterns of Business Accelerator in Science and Technology Park in China. *Technology and Innovation Management, 4*, 020.
Shu-ying, Z. L.-m. L., & Shan, L. (2012). The Research on the Incentive Mechanism of Business Accelerator Based on Multitask Principal-agent Theory. *Shanghai Journal of Economics, 12*, 012.
Shuhua, H. K. Z. (2012). The development path of business accelerators in China. *Science Research Management, 1*, 015.
Smith, S. W., & Hannigan, T. J. (2014). *Home Run, Strike Out, or Base Hit: How Do Accelerators Impact Exit and VC Financing in New Firms?* Paper presented at the Academy of Management Proceedings.
Weiblen, T., & Chesbrough, H. W. (2015). Engaging with Startups to Enhance Corporate Innovation. *California Management Review, 57*(2), 66-90.
Yanxia, W., & Shuhua, Z. (2011). The Function of Business Accelerator – An Empirical Analysis Based on 10 Business Acceleratorsin the United States [J]. *Contemporary Economy & Management, 4*, 005.
Yanxia, W., & Shuhua, Z. (2014). From Business Incubator to Business Accelerator: Origin, Evolution and Trend. *Contemporary Economic Management*. 2014-04.
Ye, H.-j., & Zhong, S.-h. (2012). The first business accelerator network in the world [J]. *Studies in Science of Science, 1*, 012.
Ye, H., & Zhong, S. (2012). Business accelerator network: a powerful generator of strategic emerging industries. *OIDA International Journal of Sustainable Development, 4*(06), 11-23.

Many of these journal papers deal with accelerators in China, where they seem to have become a promising instrument for the support of innovation and entrepreneurship. China invests heavily in the promotion of entrepreneurship and business building. It has recently announced a $US6.5 billion venture capital fund to support startups in emerging industries.[11] There are also incubators, such as that in Dongguan prefecture, specializing in supporting returned overseas citizens and offering grants, equipment and business support. In addition to journal publications there are:

- masters and doctoral theses (19),
- conference proceedings (7),
- working papers (15).

The Northern European and Scandinavian countries have produced a significant number of master and doctoral thesis publications on accelerators.

Accelerator Definitions

Most papers initially seek to clarify the properties and defining characteristics of an accelerator and focus on the structural attributes of the phenomenon: that is, they look for the organisational form of the accelerator in terms of ownership, roles and responsibilities, participants and formal processes. The majority of publications ultimately rely on the definition of Miller and Bound (2011): *"An application process that is open to all, yet highly competitive, provision of pre-seed investment, usually in exchange for equity, a focus on small teams not individual founders, time-limited support comprising programmed events and intensive mentoring,*

11 http://www.xdz.com/community/locals%20opinions/2015-03-10/609.html.

cohorts or 'classes' of startups rather than individual companies" (P. Miller & Bound, 2011, p3).

Several characteristics in this definition are not essential: equity participation and small teams for example. Some non-structural elements, such as the intense pressure, the competitiveness and the "goal of making the trial-and-error innovation process faster and more efficient" (Merchán Higuera, 2014, p. 3) are omitted, which reduces the visibility of features which we believe require research. Table 2 lists the essential and non-essential features of accelerators and the sub-type of corporate accelerators.

Table 2: Essential and non-essential features of accelerators and corporate accelerators

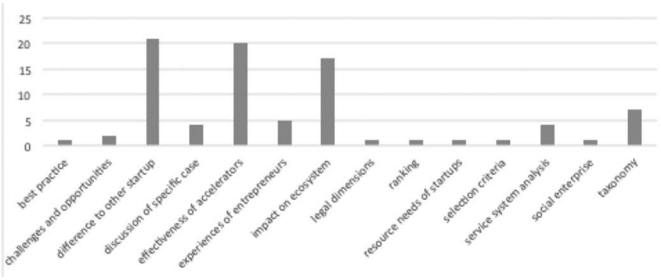
Essential features of accelerators	Common but not essential features of accelerators
■ open application process ■ highly competitive ■ provision of pre-seed investment ■ time limited support ■ programed events ■ mentoring of participants ■ mandatory networking	■ meets strategic objectives of the accelerator ■ equity participation ■ focus on teams not individuals ■ run as cohorts ■ "graduation" via a "demo day ■ shared workspace or meeting periodically ■ run by a specialist organisation or consultancy ■ seed phase and possibly growth phase funding
Essential features of corporate accelerators	**Common but not essential features of corporate accelerators**
■ process initiated and funded by an established firm ■ established firm determines the content, duration and form of the accelerator	■ directed at strategic objectives of the firm (might be more than product development) ■ accelerator can be owned and managed internally, externally by a third party, or by a specialist accelerator firm. ■ participants can come from within the firm ■ directed at strategic objectives of the startup ■ outcomes, process and events may be kept confidential ■ offers company-internal resources and expertise to the startups

Emerging Themes

We identified several emerging themes in the research literature via analysis of abstracts, keywords and the paper content, followed by coding and abstraction. The dominant themes are listed in Figure 2 and cover:

- The difference of accelerators to other startup support instruments
  (Chang, 2013; Heinemann, 2015; Lehmann, 2014; Stagars, 2015).
- The performance and effectiveness of accelerators
  (Chang, 2013; Heinemann, 2015; Lehmann, 2014; Stagars, 2015).
- The impact of accelerators on the startup ecosystem
  (Birdsall, Jones, Lee, Somerset, & Takaki, 2013; Bliemel, Flores, Hamilius, & Gomes, 2013; Bosma & Stam, 2012).

Fig. 2: Subjects of publications on accelerator programs 2010-2015.



Other topics included discussion of personal experiences of participants, attempts at an analytical taxonomy of accelerators and cases.

Research Methodologies and Data Collection

Most publications discuss the recent developments of accelerators without relying on a rigorous or accepted set of data collection tools or methodologies. This is often followed by an analysis of an existing, publicly accessible dataset of one or more accelerator programs. There are however, also a number of case studies, expert interviews and literature reviews which are usually of a general nature.

Benchmark analysis was also performed (Merchán Higuera, 2014) as well as surveys (Birdsall et al., 2013; Borella, 2012; Haines, 2014; Isabelle, 2013).

There is scope therefore to improve the rigour of the research, but also to move to in-depth studies involving rich, primary data. Much existing data is sourced from entrepreneurs and accelerator operators. Input from startups and corporate participants is required to give a balanced view and provide data about success rates, the achievement of objectives, the impact on participants, critical success factors and the effectiveness of the processes. Table 3 lists the research methodologies applied and their data sources.

Table 3: Research methodologies and matching themes

Case Study Methodology
Experiences of entrepreneurs (D. Levinsohn, 2014)
Effectiveness of accelerators (Wu, 2014)
Experiences of entrepreneurs (Peng, 2014)
Experiences of entrepreneurs (D. S. Levinsohn, 2015)
Effectiveness of accelerators (Stayton, 2012)
Discussion of specific case (Cortes-Lobos, 2013)
Difference to other startup support instruments (Pietrasieński, 2013)
Taxonomy of accelerators (Petersson et al., 2012)
Taxonomy of accelerators (Radojevich-Kelley & Hoffmann, 2012)
Impact on ecosystem (Mason, 2013)
Effectiveness of accelerators/experience of entrepreneurs (Borella, 2012)
Difference to other startup support instruments (Weiblen & Chesbrough, 2015)
Taxonomy of accelerators (Abouchar, 2014)
Expert Interviews Methodology
Resource needs of startups (Bhatli, Borella, Jelassi, & Saillant, 2015)
Effectiveness of accelerators (Hallen, Bingham, & Cohen, 2014)

Difference to other startup support instruments (Lehmann, 2014)
Legal dimensions (Bernthal, 2015)
Impact on ecosystem (Autio et al., 2013)
Effectiveness of accelerators (Slaats, 2015)
Effectiveness of accelerators (Frimodig & Torkkeli, 2012)
Impact on ecosystem (A. R. Sharma, Joshi, & Shukla, May 19, 2014)
Service system analysis (Komi, Still, Wallin, & Jaring)
Discussion of specific case (Carmel & Richman, 2013)
Effectiveness of accelerators (Christiansen, 2009)
Difference to other startup support instruments (Dee et al., 2015)
Difference to other startup support instruments (P. Miller & Bound, 2011)
Impact on ecosystem (Andreev Stoilov & Pérez Castrillo, 2015)
Literature Review Methodology
Effectiveness of accelerators (Dempwolf et al., 2014)
Effectiveness of accelerators (Hallen et al., 2014)
Difference to other startup support instruments (Heinemann, 2015)
Service system analysis (Huojie & Shuhua, 2013)
Impact on ecosystem (Bliemel et al., 2013)
Difference to other startup support instruments (Cohen & Hochberg, 2014)
Impact on ecosystem (Hochberg, 2015)
Difference to other startup support instruments (Dempwolf et al., 2014)

Theoretical Approaches

Of 88 publications on accelerators only 11 publications are based on an established theoretical framework, such as actor-network theory, social realism or diffusion of innovation. Publications are largely case-studies, interviews or survey based with data being largely taken at face value. This underscores the early stage of research in the area, where definition of the phenomenon, building an understanding of the context, and exploration of the utility and performance of accelerators are in the foreground. The theoretical approaches applied so far to the accelerator phenomenon are listed in Table 4.

Table 4: Theoretical approaches to accelerator research

Theoretical approach	Application of theory
Network theory	"Network theory also suggests that hubs, such as accelerators, can help embed nodes, such as startups, in preferred networks and that such networking can enhance firm outcomes, such as survival. Network theory also suggests that establishing network ties comes at a cost, and that accelerator and start-up resources must be adequate to enable useful network connections." (McHugh, Whipple, & Yang, 2013, p. 425)
Lean startup	"Startup accelerators have expanded worldwide in recent years, fostering the development of technology startups and spreading Lean practices and Silicon Valley values to all corners of the globe." (Haines, J. K. 2014, p. 282)
Resource orchestration theory	"Accelerators aim to speed up the success of participating startups, yet few discussed on how an accelerator offers support and how startups access or manage the resources." (Wu, 2014, p. 1)
Existential theory of learning	"This dissertation explores the learning of social entrepreneurs in accelerators." (D. S. Levinsohn, 2015, p. 7)
Dynamic capabilities	"From a dynamic capabilities perspective, this paper examines how companies start-up and bring innovative products to market quickly." (Stayton, 2012, p. 1)
Institutional theory	"lens of institutional theory is [...] used to propose that success factors help accelerators acquire the legitimacy in the eyes of their stakeholders " (Clarysse & Yusubova, 2014, p. 1)
Principal agent theory	"This paper present multi-task principal-agent models to study the incentive mechanism between government and business accelerator." (Shu-ying & Shan, 2012, p. 1)
Resource based view of the firm	"1) Do accelerator companies play a vital role in the support, education, and aid the success of fast-growing start-ups or nascent firms? 2) What support do accelerator companies provide to participants? 3) What is the screening process that accelerators use? 4) According to accelerator companies, what are the challenges and obstacles new ventures face?" (Radojevich-Kelley & Hoffmann, 2012, p. 51)
Innovation theory	"The case discusses how recent innovations in the entrepreneurial ecosystem, such as crowdsourcing through Kickstarter, and the growing number of startups connecting with angel investors through AngelList have affected a startup's traditional first choice of funding, venture capital." (Mason, 2013, p1)

Research Findings

The research findings, whilst limited, are important. For example, a number of publications point out that "accelerators are successful", while others find that they "provide benefits for entrepreneurs". This provides confirmation that there is perhaps more than just hype to the phenomenon and may motivate organisations, startups and researchers to investigate accelerators, hopefully to their mutual benefit. For example, Heinemann (2015) finds that there are positive indications of success for firms in achieving strategic gains, and that growth in the number of corporate accelerators (although slowing) has been strong. A summary of the findings so far is in Table 5:

Table 5: Findings in accelerator research

Findings	Examples	No. of publications
Accelerators are successful	(Autio et al., 2013; Borella, 2012; Fehder & Hochberg, 2014; Mejia & Gopal, 2015)	8
Accelerators provide benefits for entrepreneurs	(A. R. Sharma et al., May 19, 2014)	13
Accelerators could be improved	(Haines, 2014; Weiblen & Chesbrough, 2015)	3
Accelerators are different to other startup support instruments	(Bliemel et al., 2013; Chang, 2013; Shuhua, 2012; Stagars, 2015; Ye & Zhong, 2012)	13
Accelerator ecosystem could be improved	(Carmel & Richman, 2013; Petersson et al., 2012; Pietrasieński, 2013)	10
Accelerators are different to each other	(Clarysse & Yusubova, 2014; Dempwolf et al., 2014; D. S. Levinsohn, 2015)	7
Basis for evaluation of accelerator programs	(Hochberg & Kamath, 2012; Komi et al., 14-17 June, 2015.)	5
Important resources provided by accelerators	(Bernthal, 2015; Chen, Wang, & Du, 2010; Shu-ying & Shan, 2012; Yanxia & Shuhua, 2011)	14
Impact of accelerators	(Abouchar, 2014; Bornhorst, Zurbuchen, Grover, & Weiser, 2010)	5

Corporate Accelerators

The preceding sections demonstrate that the accelerator approach to business development is significant and increasing in importance as an innovation pathway: yet it is not unproblematic. We turn now to the specific case where these

instruments are employed by established firms for their own purposes (whatever they may be). We have seen that there are differences to "normal" accelerators, and that being able to manage these programs may be of great importance to organisational success.

Considering the overall number of publications on accelerators in general, the number of scientific papers on "corporate accelerators" is very low (see figure 1). However, Hochberg (2015) claims "Corporate-initiated programs are also on the rise, exhibiting a variety of forms and approaches" (p. 7). This is supported by the increasing number of web pages, company programs and news articles that deal with the phenomenon. We had 1,590 hits for "corporate accelerator" worldwide between 2010 and 2015 when using Google search and 121 in Google news. Online articles report a glut of corporate accelerator programs,[12] warn of the phenomenon[13] or even announce the year 2013 as the "year of the corporate accelerator".[14]

However, despite the recent trend in the real economy, taking all publications (1216) on accelerators from 2001 to 2015, only 9 were dedicated to "corporate accelerators". These were published between 2013 and 2015. Amongst these publications are 2 theses (Heinemann, 2015; Lehmann, 2014), 2 journal papers (Hochberg, 2015; Weiblen & Chesbrough, 2015) and 2 reports (Clarysse et al., 2015; Dee, Gill, Weinberg, & McTavish, 2015).

Corporate accelerators are structurally similar to private ones as fixed-term and cohort-based programs (Heinemann, 2015; Hochberg, 2015). Heinemann (2015) shows that corporate accelerators are mostly established by information-related companies that are already investing in venture capital. A database of 847 larger capitalized corporations demonstrates that these accelerators are not likely to deliver significant profit for the investing company. The goal seems rather to help the established company innovate along their value chain and distribution channels. "*The emergence of the corporate accelerator appears to have arisen from a desire by many companies to bring themselves closer to innovation and gain access to windows on emerging technology, thus staving off the gale of creative destruction.*" *(Hochberg, 2015, p. 24).*

These initial observations suggest that a corporate accelerator is structurally similar to a business, seed or startup accelerator, but focuses on insourcing external innovation (open innovation) to stimulate corporate innovation and creativity. Seed, business and startup accelerators are mainly investment-driven whilst the few public accelerators are mostly concerned with building an innovation or entrepreneurial ecosystem (Clarysse et al., 2015). In established companies, accelerator programs generally replace or complement traditional open innovation instruments such as corporate incubators or venture capital.

Conclusion

Most firms engaging with startups seem to be especially interested in enhancing their innovation capacity, although public relations and branding are also seen as useful by-products.

Are corporate accelerators an appropriate solution? The results from the general case of accelerators suggest they might be. The competitive selection processes, certain roles and expectations assigned to startups and other stakeholders involved, a defined time period, mandatory networking and education, and the structuring of these programs in batches or cohorts introduce high pressure and early recognition of failure. But how do these aspects interact to form successful innovation programs, especially when corporate requirements are thrown into the mix?

Without quantitative targets, regular tracking, reporting and intervention, it may be difficult to get accelerator programs established or accepted. Future research needs to develop metrics and measurements towards innovation and efficiency in the use of resources in running of the corporate accelerator program. The following research questions must be addressed: What key performance indicators are most appropriate for measuring achievements of strategic objectives such as learning, culture change and innovation performance? How might key performance indicators distort the innovation performance of an accelerator?

Accelerators appear to improve performance and outcomes over other open innovation instruments, but there are few objective measures available. Improvements may be due to the compressed time frame, team selection, methodology or some other factor. A theoretical framework or systems-theoretic analysis is required which can justify the performance claims of accelerators and explain them in organisational, cognitive or psychological terms.

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