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Stefan Bauer

Vienna University of Economics and Business, stefangeorgbauer84@gmail.com

Nikolaus Obwegeser

Aarhus University, Aarhus, DK, nikolaus.obwegeser@gmail.com

Zlatko Avdagic

zlatko.avdagic@gmx.at

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CORPORATE ACCELERATORS: TRANSFERRING TECHNOLOGY INNOVATION TO INCUMBENT COMPANIES

Completed Research

Bauer, Stefan, Vienna University of Economics and Business, Vienna, Austria,
Stefangeorgbauer84@gmail.com

Obwegeser, Nikolaus, Aarhus University, Aarhus, Denmark, nikolaus@mgmt.au.dk

Avdagic, Zlatko, Vienna University of Economics and Business, Vienna, Austria,
Zlatko.Avdagic@gmx.at

Abstract

The recent phenomenon of corporate accelerators is an excellent opportunity for incumbent companies to participate in promising innovations from startups all over the globe. Incumbent companies introduce structured accelerator programs for cohorts of startups, which in turn benefit from resources, mentoring and networks. The underlying research analyzes the growing interdisciplinary scientific literature on corporate accelerators to shed light on this uprising topic. We conducted a literature review according to the guideline of Webster and Watson (2002) by analyzing 20 scientific references. The results show that researchers applied qualitative methods to explore accelerators in detail and quantitative methods are used to analyze secondary data on startups and accelerators. Overall, most findings of recent research are of exploratory nature and our results summaries the main findings of the articles. Finally, we extracted a list of success factors for incumbent companies running corporate accelerators as well as for startups participating in such programs. In terms of theoretical impact, the articles analyzed apply open innovation theory, the resource based view and institutional theory to explain corporate accelerators. Our study reveals that Information Systems research has so far neglected to conduct studies researching corporate accelerators although the findings of our review show large potential for future research.

Keywords: Corporate Accelerator, Outside-In Open Innovation, Startups.

1 Introduction

Incumbent companies are under pressure because disruptive new technology innovations are on the rise and undermine traditional business models (Chesbrough, 2010). Recent history shows clearly that many incumbent companies such as Kodak overlooked innovative tech trends (Lucas and Goh, 2009). Incumbent companies struggle to be innovative, because they suffer from organizational (Hill and Rothaermel, 2003). According to previous research and practitioners reports, many incumbent companies fail to develop innovative solutions.

The number of startups is growing across all industries, often focusing on promising and disruptive innovations (Chesbrough, 2010). During the last decade, there are many examples of disruptive innovations found by startups, such as new digital products using disruptive technologies (e.g. mobile applications) for achieving service innovation (Pai, 2014). In general, a startup is a growth-oriented business that is seeking for a repeatable, scalable business model, which builds on innovative products or services in an uncertain and volatile environment (Radojevich-Kelley and Hoffman, 2012). Founders and startup teams are mostly known for their drive for innovation and performance, their flexibility and innovativeness (Wasserman, 2016).

The innovation gap between incumbent companies and startups led to the development of various mechanisms, designed to allow incumbent firms to take advantage from startups innovation potential (Miller and Bound, 2011). However, the increasing amount of venture capital available results in higher competition for promising tech innovations. Promising innovative startups in late stages are overpriced/high in price and therefore incumbent companies are searching for ways to attract startups before their development is completed and the valuation is high. Corporate accelerators are a possibility for incumbent companies to transfer innovation from startups to incumbent companies (Kohler, 2016).

Corporate accelerators are special organizational forms to create an *outside-in open innovation* process (Weiblen and Chesbrough, 2015). The outside-in process is defined as the integration of external knowledge from external partners (e.g. startups, universities, customers) to increase the quality and pace in the innovation process of the company (Gassmann and Enkel, 2006; Miller and Bound, 2011). Further, corporate accelerators are defined as “a time-limited program which startups can apply for if their product falls into a certain category” (Weiblen and Chesbrough, 2015). Recently corporate accelerators received growing attention in academic and practitioners’ literature (Miller and Bound, 2011).

The underlying paper aims to analyze the academic literature on corporate accelerators since 2005. Until now, only few theories are applied to the concept of corporate accelerators and the academic research has just began to understand the concept of accelerators. The research objective is to highlight research gaps and possibilities for further empirical research. Further, we aim to uncover possible links to scientific theories from the Information Systems field to outline a future research agenda.

The remainder of the paper is structured as follows. Section two consists of definitions and delimitations of the topic and the terms. Afterwards, we move on to describe the research methodology. Then we present the results of the literature review in detail. Finally, we critically discuss previous findings and outline connections to interdisciplinary research. Section six gives a short conclusion.

2 Theoretical Background

Corporate accelerators offer development programs for promising high tech startups to develop their products and services mostly in early stages by offering mentoring, networking, management services, knowledge and expertise, services, access resources from stakeholders and office space (Clarysse and Yusubova, 2014; Malek et al., 2014; Radojevich-Kelley and Hoffman, 2012). *YCombinator*, the first accelerator, was founded in US in the year 2005 and since that year several accelerators have been introduced all over the world such as *500 Startups*, *Techstars* and *Amplify LA* (Regmi et al., 2015; Kohler, 2016). The first corporate accelerator was founded in 2010 (Kohler, 2016). Some authors define accelerators as special types of incubators (Malek et al., 2014). However, these two models can be distinguished by different characteristics. Accelerator programs are set up for short time periods, commonly three months (Cohen and Hochberg, 2014; Weiblen and Chesbrough, 2015), in opposite to incubators, which usually last between one and five years (Barrow, 2001). The limited duration of an accelerator raises the founder's attention on the startup and lead to a fast evaluation of the ideas (Cohen, 2013). Longer relationships often lead into mutual dependencies between the agents and therefore accelerators promote quick growth or failure of a startup (Kohler, 2016).

Networking and funding are essential aspects for startups joining an accelerator program. A corporate accelerator selects a cohort of startups from the applications to participate in an accelerator program (Cohen and Hochberg, 2014). The founders of these cohorts in an accelerator program get the possibility to connect with each other, benefiting from their diverse skills and helping each other in difficult situations (Cohen and Hochberg, 2014). One of the highlights of an accelerator program is the public pitch event, often called *demo day*, where investors and business angels participate (Kohler, 2016).

Accelerators often tackle one main challenge for startups, namely the life support trap (Mian et al., 2016). Accelerators usually receive an equity stake of 5 to 7% in return for a five-figure investment (Clarysse and Yusubova, 2014; Fehder and Hochberg, 2014). Figure one summaries the relationships of the agents within an accelerator program.

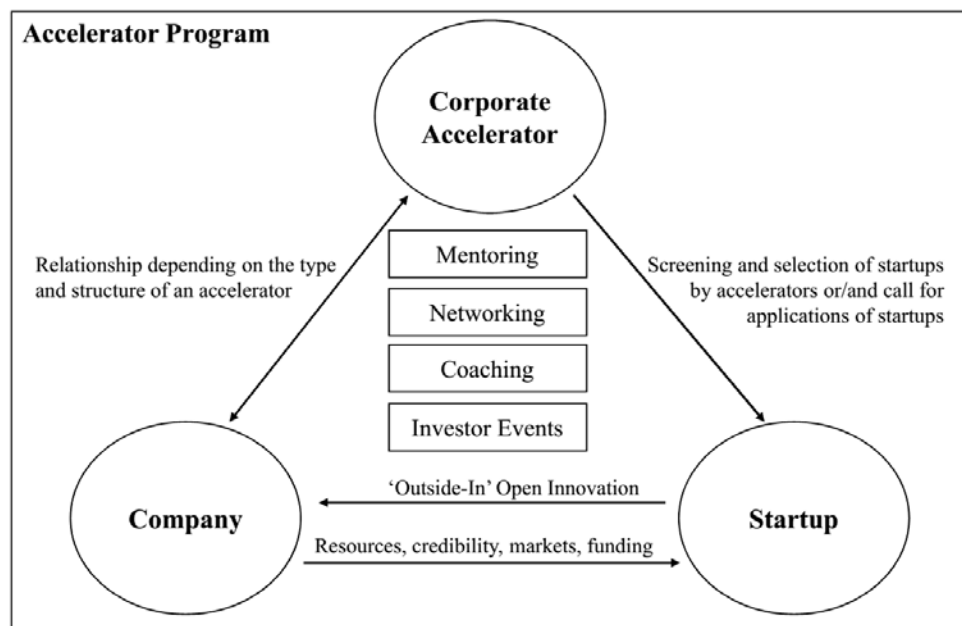


Figure 1 Relationship of Agents within an Accelerator Program (own creation)

In principle, there are two different models of corporate accelerators, namely generic and specific accelerators (Cohen and Hochberg, 2014). Generic accelerator programs are targeting many kinds of startups, in contrast to specific accelerators, which focus on particular industries and technologies. Interestingly, most corporate accelerators are vertically focused (digital products) (Kohler, 2016). Famous corporate accelerators are run in the field of healthcare (Bayer), insurance (Allianz), entertainment (Disney) or consumer packaged goods (Coca-Cola) (Kohler, 2016).

Compared to the dot-com era, new startups profit from shrinking costs for setting up innovative business models (Miller and Bound, 2011). First, hardware and software costs of technology are cheaper because of cloud services and the open source trend. Second, there are easier routes to acquire customers through social media and search engines. Third, business model innovations lead to better forms of direct monetization (Miller and Bound, 2011; Dempwolf et al., 2014).

3 Methodology

For our literature review we followed the methodological guidelines of Webster and Watson (2002). We defined the research area of corporate accelerators and set the goal of getting an in depth review of the scientific literature from 2005 to 2016. The research scope was limited to include scientific articles since 2005 because the first accelerator was found in that year. After defining the research scope, the keywords ‘corporate accelerator(s)’, ‘business accelerator(s)’ and ‘accelerator(s)’ were used to find academic literature in the databases Google scholar (<https://scholar.google.at/>) and Sciencedirect (<http://www.sciencedirect.com/>). We selected these two databases because both databases index most significant journals and conferences in the Information Systems and Management domain. Unfortunately, due to legal rights, few articles are not accessible for us (Hallen et al., 2014; Yu, 2014). As a first step we manually screened all relevant articles. We excluded all articles, which were not relevant to our topic of interest by a screening the articles for insights on corporate accelerators. We arrived at a final set of 20 scientific articles, which we analyzed in detail following (Webster and Watson, 2002).

4 Results

4.1 Journals and Conference Proceedings

Most scientific literature was published in Management journals (e.g. California management review, Long Range Planning), Finance journals (e.g. The Journal of Private Equity, Journal of Corporate Finance) and innovation journals (e.g. Technovation). Further, several articles were published in conference proceedings from the field of Management and Innovation research. Interestingly, no paper was published in an Information Systems outlet, although information technology plays a crucial role for accelerators and technology startups. Besides the academic literature, we also used the findings of reports (Dempwolf et al., 2014) and practitioners literature (Miller and Bound, 2011) for our analysis.

4.2 Research Methodologies

In terms of methods, most scientific research on accelerators is of qualitative nature. These studies are often based on semi-structured interviews of accelerator managers and participants (startups). Accelerators are a relatively young phenomenon; hence science explores the field by qualitative studies. Some authors point out that the field is not (yet) accessible by traditional quantitative methods, as it lacks large sample sizes for statistical analysis (Radojevich-Kelley and Hoffman, 2012).

We found four quantitative papers, which all used secondary data for their analysis. One paper used a mix of qualitative and quantitative methods, in contrast to one research, which conducted a literature review on incubators and dealt with accelerators in their paper. Finally, one economic analysis in form of a portfolio analysis was carried out.

4.3 Overview of main findings

Author/Paper	Methodology	Findings
(Kohler, 2016)	Qualitative analysis: In total 40 interviews with corporations' managers and participants (startups) of corporate accelerators.	Framework and strategies for managers to design corporate accelerators (proposition [relationship between the corporation and the startup in terms of process, people, and place], process [from selection phase to graduation], people [both inside and outside the company], and place).
(Pauwels et al., 2016)	Qualitative analysis: Semi-structured interviews with managing directors of 13 cases (accelerators) combined with analyzation of archival data.	Identification of key design parameters. There exists three different types of accelerators (The ecosystem builder, the deal-flow maker, the welfare stimulator) and five different building blocks. Accelerators are seen as a distinctive incubation model.
(Mian et al., 2016)	Literature Review of the business incubator literature from 1985 to 2014. Accelerators are discussed as a new phenomenon in the ecosystem.	There is a lack of scientific research on the role and efficacy of accelerator programs. Accelerators are an important part of the ecosystem.
(Weiblen and Chesbrough, 2015)	Qualitative case study: Semi-structured interviews with 12 executives, program managers, industry analysts, and startup CEOs.	Typology of corporate mechanisms to engage with startups: corporate venturing, corporate incubation, startup program outside-in and inside-out platform. (Balance speed and agility against control and strategic direction). Accelerators are outside-in open innovation programs.
(Holstein, 2015)	Descriptive study based on a not defined number of interviews and secondary sources (websites of startups, universities).	VC firms and angel investors benefit from non-profit accelerators because of the selective application process. Startups are forced to grow or fail fast in the short time period. There is a significant impact on economy (jobs, taxes, and higher wages).
(Regmi et al., 2015)	Quantitative analysis: Secondary data from seed-db.com. Data about 165 accelerators and 4800 startups since 2005 worldwide.	Accelerators increase the chances of a startup to survive by approximately 25%. The study distinguishes between accelerators based in US and outside US. Compared to startups in US, startups from elsewhere have a better success rate.
(Scott et al., 2015)	Quantitative research: Secondary data from 652 ventures in multiple industry sectors (evaluated over an eight year period)	Empirical evidence for the higher chance of reaching commercialization of positive evaluated innovations (startups) from a large number of skilled practitioners in the entrepreneurship and technology communities
(Cohen and Hochberg, 2014)	Secondary data analysis based on the seed accelerator ranking project and previous research (Cohen, 2013).	Definitions and delimitation of accelerators from other stakeholders in the ecosystem (such as incubators, angel investors) are provided. Description of different kind of accelerators such as private and public accelerators (distinguished by sponsors).

(Fehder and Hochberg, 2014)	Quantitative analysis of secondary data: panel data set of US Census MSA regions across ten years.	Accelerators have regional impact on the entrepreneurial ecosystem. Accelerators lower the search costs for both entrepreneurs and investors seeking early stage investments. As such, accelerators are predicted to stimulate an increase in the level of startup investment activity in a region.
(Malek et al., 2014)	Qualitative analysis: Interviews with managers and entrepreneurs. Benchmarking analysis based on publically available data (web site information and reports).	Development of a typology of accelerators' capabilities by considering strategy, governance, business model, operations and finance. Finally, it is illustrated how the typology can be utilized to describe, understand and prescribe appropriate capabilities.
(Wise and Valliere, 2014)	Quantitative research based on 408 firms after participating in two accelerator programs. Kaplan-Meier Analysis of exits.	There is a beneficial effect of the years of start-up founder experience available in the accelerator management team on the failure hazard of tenant firms (each additional year decreases the probability). In opposite, the degree of connectedness of the management team has no effect on the failure exit hazard of the tenant firms.
(Haines, 2014)	Ethnography research of two international field sites (Singapore and Buenos Aires) complemented by interviews with accelerator participants around the world.	Accelerators are seen as sociotechnical systems enabling innovation and they provide certain cultural capital (explicit and implicit teaching of certain values and norms). Founders have to focus on metrics to benchmark progress. Accelerators play a direct role in creating value for the product itself.
(Kim and Wagman, 2014)	Economic analysis: Portfolio analysis.	Accelerators tend to partially disclose information (communication of positive signals and conceal negative signals).
(Dempwolf et al., 2014)	Conceptual research and analysis of secondary data from organizations and media groups.	Taxonomy of accelerators. Long and short term metrics for accelerators and for startups.
(Sharma et al., 2014)	Qualitative interviews with stakeholders of 10 accelerators in India. Secondary analysis of available statistics.	Accelerators improve the mortality rate of startups. Further, accelerators have a positive impact on startups growth and on their value proposition, team building and revenue plan.
(Clarysse and Yusubova, 2014)	Qualitative analysis: Multiple case study of 13 accelerators from Europe (Paris, London, Berlin) based on structured interviews and informal talks with accelerators managers.	Identification of success factors under the lens of institutional theory: Selection process and criteria; Business support services: mentoring is perceived as the most important element; External and internal network opportunity for new ventures (e.g. Demo day).
(Isabelle, 2013)	Qualitative and quantitative research: (1) 10 in-depth interviews with managers from six cases from Canada. (2) Quantitative surveys (N=235) of participants from incubators or accelerators in US.	Key success factors which firms should consider: Stage of venture (accelerators focus on increase growth quickly); fit with accelerators mission, selection and graduation policies (flexibility), services provided (meet the needs), and network of partners (support firms: legal, regulatory, technical, finance).
(Frimodig and Torkkeli, 2013)	Qualitative analysis: Semi-structured interviews with 15 managers of accelerators and related professionals from various countries.	The preconditions for the success of an accelerator are the access to business competence and the ability to transfer it from itself to the startup.

(Radojevich-Kelley and Hoffman, 2012)	Qualitative analysis based on six case studies (interviews, website analysis, and observations).	Empirical evidence for the importance of mentorship driven programs for increasing success rates of startups (access to capital). Unique and specific selection criteria are very important. The Resource Based View of the firm theory was utilized for the analysis.
(Miller and Bound, 2011)	Review of publications, documents and reports from organizations and science.	Description of the most successful accelerators. Description of accelerator business models. Criticisms of the accelerator programs.

Table 1. Main Findings per Article.

5 Discussion

5.1 Categories of Corporate Accelerators

Several articles discuss different categories of corporate accelerators (Cohen and Hochberg, 2014; Dempwolf et al., 2014; Sharma et al., 2014; Kohler, 2016; Pauwels et al., 2016). While most authors use simple models and distinguish among nonprofit, public and corporate accelerators (Cohen and Hochberg, 2014), Pauwels et al. (2016) propose a motivation-based categorization into ecosystem builder, the deal-flow maker and the welfare stimulator.

First, corporations use the ecosystem builder model for creating a network of stakeholders to finally connect customers with startups. This model is best suited for incumbent corporations. Second, the deal-flow maker accelerators aim to uncover promising startups for investors. Finally, the welfare stimulator type yields to foster economic growth in a region or technological domain. Similar to that, Sharma et al. (2014) and Dempwolf et al. (2014) distinguished between the driving forces behind an accelerator. Therefore they differentiated between angel-backed accelerators, corporate-driven accelerators, VC-backed accelerators and institution driven accelerators (Sharma et al., 2014). The data of Pauwels et al. (2016) also shows that there exists mixtures of different types of accelerators. We conclude that research might analyze the certain effects of the specific types of accelerator programs for reaching the goals of all agents.

5.2 Success Factors for incumbent companies and for startups

Several success factors have been identified for incumbent firms as well as for startups participating in accelerator programs. The plethora of different designs of corporate accelerators may lead to the fact that not all success factors can be applied to all types of corporate accelerators. Table 2 provides a list with all success factors identified for incumbent companies.

Scientific Articles	Success Factors for Incumbent Companies
(Radojevich-Kelley and Hoffman, 2012; Frimodig and Torkkeli, 2013; Kohler, 2016)	Finding the right selection criteria of startups (e.g. dynamic and diverse teams with a scalable business model). Unique selection criteria lead to higher success rates.
(Kim and Wagman, 2014)	Finding the right startup portfolio size (number of companies in an accelerator program)
(Weiblen and Chesbrough, 2015)	Clear definition of companies' value proposition towards a startup
(Kohler, 2016)	Create mutual value through the accelerator program
(Wise and Valliere, 2014)	Prior knowledge (number of years of start-up founder experience available)

	in the accelerator management team)
(Dempwolf et al., 2014; Haines, 2014)	Incorporation of metrics to track progress of startups
(Weiblen and Chesbrough, 2015)	Definition of expected output of their engagement with startups
(Frimodig and Torkkeli, 2013)	Provide access to business competence and ensure the ability to transfer business competence to the startup
(Frimodig and Torkkeli, 2013)	Mentor selection (congruent with primary vision and goals)
(Kohler, 2016)	Commit experts and mentors from inside and outside the company
(Weiblen and Chesbrough, 2015)	Set procedures in place to ensure the intake of program created innovations

Table 2. Success Factors for Incumbent companies and for startups.

Scientific literature on accelerators highlights several factors for incumbent corporates to ensure that their accelerator programs are a success. First, finding the right selection criteria for startups is very important (Kohler, 2016). Accelerators, which use unique selection criteria, have higher success rates for their graduates (Radojevich-Kelley and Hoffman, 2012). The size of the portfolio of startups in an accelerator cohort is important, because it seems that including too many or too little startups could lead to unsatisfied results (Kim and Wagman, 2014). Next, the incumbent companies should have a clear definition of the value proposition toward the startups, because they have to bring resources and networks in the program (Weiblen and Chesbrough, 2015; Kohler, 2016). Further, corporate accelerators should incorporate metrics to track the progress of the startup in the program and also to track themselves (Dempwolf et al., 2014; Haines, 2014). For tech startups, short term metrics are customer acquisition, activation (percentage that starts using the product), retention (percentage of users that return to use the product or service again), and long term metrics are revenue or rate of return to investors (Dempwolf et al., 2014). Moreover, there is a beneficial effect of the years of startup founder experience available in the accelerator management team (Wise and Valliere, 2014). Further, mentorship driven programs increase the overall success rates of start-ups by providing entrepreneurs with access to angel investors and venture capitalists which tend to increase success rates (Radojevich-Kelley and Hoffman, 2012). Selecting the right mentors for the specific program and committing them to your program is another essential aspect (Frimodig and Torkkeli, 2013). Finally yet importantly, incumbent companies have to set procedures in place to ensure the intake of program created innovations

Scientific Articles	Success Factors for Startups
(Kohler, 2016)	Focus on achieving product - market fit (instead of achieving product - corporate fit)
(Scott, Shu, and Lubynsky, 2015)	Frequent critical evaluations from a large number of skilled practitioners (higher likelihood to reach commercialization)
(Haines, 2014)	Prioritize the suggestions of mentors and incorporate only useful and consistent recommendations
(Kohler, 2016)	Acceptance that incumbent companies participate in your innovation
(Sharma, Joshi and Shukla, 2014)	Active participation in an accelerator program raises the likelihood of survival (use the resources to offer freemium or not immediately sustainable models first)
(Haines, 2014)	Follow the lean startup principals

Table 2. Success Factors for Incumbent companies and for startups.

Startups have to consider several factors for running through an accelerator program. First, startups have to focus on achieving a product – market fit instead of achieving a product – corporate fit (Kohler, 2016). Second, it is recommended that startups undergo a frequent critical evaluation from a large number of skilled practitioners and mentors (Scott et al., 2015). But on the other hand, startups should prioritize the suggestions of the mentors and they should only consider valuable feedback (Haines, 2014). Next, startups have to accept that parts of their innovative technology are incorporated by corporate accelerators (Kohler, 2016). If startups are not ready to accept the technology transfer, then they should refuse to participate in an accelerator. A huge benefit for startups is the economic capital, which incumbent companies bring in the relationship. Often, startups can afford to create a product that is free or freemium or is not immediately sustainable because of the support of the accelerator (Haines, 2014). Startups may develop their products and services according to the lean startup principles, in which startups use agile development practices to develop a minimum viable product and further focus on customer development and continuous deployment (Haines, 2014).

5.3 Applied Theories and Recommendations for Future Research

Several scientific theories have been applied to accelerators research in recent years, such as the Resource Based View of the Firm (Radojevich-Kelley and Hoffman, 2012), Open Innovation Theory (Weiblen and Chesbrough, 2015), and Institutional Theory (Clarysse and Yusubova, 2014). The applied theories are useful for explaining the phenomenon of accelerators, but there is room for more elaborated theories in the research context. For example, the Resource Based View may be extended by the concept of Dynamic Capabilities (Teece et al., 1997), which focuses on the dynamic aspects of resource configuration and exploitation. Further, within the Open Innovation Theory, corporate accelerators are categorized as Outside-In innovation (Weiblen and Chesbrough, 2015), but an in depth analysis of the process of the intake of the innovation by the incumbent company was neglected until now. Therefore, our interdisciplinary review uncovers a large potential for Information Systems research to apply Information System theories to the research context of corporate accelerators, such as absorptive capacity (Cohen and Levinthal, 1990).

Future research will benefit from establishing clear measurements to evaluate and benchmark the success of accelerators and startups. Until now, secondary data has been analyzed by defining successful outcomes as acquisitions and unsuccessful outcomes as firm failures (Radojevich-Kelley and Hoffman, 2012; Wise and Valliere, 2014). In terms of corporate accelerators, success should be measured by taking their goals of running a corporate accelerator program into account. Besides goals such as attracting talent and change corporate culture, the main aim for incumbent companies is to identify innovation from startups and to take advantage of the startups flexibility in the open innovation process (Weiblen and Chesbrough, 2015). Corporate accelerators lead to market bubbles because of incumbent companies' heavy interest in investing (Dempwolf et al., 2014). Hence, we suggest that strategic management of corporate accelerator programs needs more sophisticated metrics to track their effectiveness.

Another promising area for future research is the cognitive bias of functional fixedness (Adamson, 1952). Corporate accelerators potentially act as gatekeepers for innovation. In this context, corporate gatekeepers decide which startups are entering the accelerator and hence gatekeeper managers decide on the progress of certain innovations. These gatekeeper managers possibly suffer from functional fixedness, which is a cognitive bias that leads the managers to apply components in the way they are traditionally used. Functional fixedness of the gatekeeper managers limits their opportunity recognition and they actively force the startup founders in a specific (social) role through the accelerator program. This situation is defined as the tactic of altercasting, which is used to force people to specific social

roles. After joining an accelerator program, there is a mutual dependency between the founders and the corporate accelerator, in which both agents are restricted by their social roles.

6 Conclusion

The underlying research sheds light on the upcoming trend of corporate accelerators for transforming startups to sources of corporate innovation. Overall, 20 scientific articles have been analyzed for uncovering research gaps and controversial discussions on corporate accelerators in the academic literature. One of the main findings of this research is a list of success factors for incumbent companies that are planning to or already run an accelerator, and for startups joining such accelerator programs. Previous research conducted mainly exploratory qualitative research. Only few scientific theories were applied in existing research. We conclude that research on corporate accelerators should use previous findings to conduct quantitative and theory testing research in future to discover the upcoming phenomenon of corporate accelerators.

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