ARTICLE

Outsourcing creativity: An abductive study of open innovation using corporate accelerators

Nancy Richter[1] | Paul Jackson[2] | Thomas Schildhauer[1]

[1] Alexander von Humboldt Institute for Internet and Society, Berlin, Germany

[2] Edith Cowan University, Perth, Australia

Correspondence
Nancy Richter, Alexander von Humboldt Institute for Internet and Society, Französische Straße 9, 10117 Berlin, Germany.
Email: nancy.richter@hiig.de

Corporate accelerators are organizational devices designed to bring together innovative new ventures and startups with specialist knowledge and creativity with the experience and funding of established companies. The main goal for the use of an accelerator program by an established corporation is to open up the innovation process and actively profit from the innovative capacity of new ventures. However, until now there has been little empirical investigation of the characteristics of this particular model of "open innovation". This paper outlines the key features of corporate accelerator programs and presents empirical data on their characteristics. The existing literature generally reflects positive results from this form of innovation but displays a lack of empirically and theoretically grounded research of how accelerator programs work. Using a standard, holistic taxonomy for programs, covering such components as strategy, resources, roles and structure, we analyzed and assessed data from stakeholders engaged in this approach to innovation in order to understand the expectations and reasoning behind these programs.

1 | INTRODUCTION

Open innovation is an innovation framework proposing that established firms use external sources as pathways to new ideas, technologies, business models and markets (Chesbrough, 2004; West & Bogers, 2014). A new generation of technology has brought cheap and immediate availability of vast quantities of data, storage, computing power, distribution and above all, direct access to consumers at any time (Song, Podoynitsyna, Van Der Bij, & Halman, 2008; Wirtz, Schilke, & Ullrich, 2010). This has dramatically increased the development and availability of innovative products and services, amplifying competitive pressure on firms to develop responses of their own and find new avenues to growth. Finding new growth and asserting oneself within this marketplace requires that firms create breakthrough, or radical, innovations (Christensen & Rayner, 2013; Madjar, Greenberg, & Chen, 2011). Such radical innovations are characterized by substantive enhancements to existing functionalities, drastically improved cost effectiveness, a high level of creativity, and greater economic risks and opportunities (McDermott & O'Connor, 2002; Vahs & Brem, 2015). They usually originate with market entrants rather than incumbents, and these lie at the core of entrepreneurial activity and wealth creation (Ahuja & Lampert, 2001; Cooper & Schendel, 1976; Foster, 1986; Kirchhoff, 1991; Schumpeter, 1975).

Under growing pressure to develop disruptive innovations in products and services, an increasing number of established companies is sponsoring, partnering with, outsourcing to, and collaborating with new ventures and startups (Blank & Dorf, 2012; Gans, 2016; Kohler, 2016; Spender, Corvello, Grimaldi, & Rippa, 2017; Viardot, 2017). In doing this they hope to profit from their knowledge, creativity and innovative capacity (Eckblad & Golovko, 2016; Zhao, Sun, & Xu, 2016). One instrument for facilitating this relationship is the accelerator program. The use of startups by established firms to explore innovation has advantages for both parties. By exploring ideas outside the box and with an open mind, startups can provide early recognition of threats and competition, introduce an entrepreneurial spirit to the established firm, and provide specialized talent and resources. Further, they are agile and responsive to changes in plan (World Economic Forum, 2014). Such collaborations reduce risk by limiting escalation of commitment and simplifying project close-down when necessary (Euchner, 2013): the business can focus on its core business where it has skills and deep knowledge (O'Leary-Collins, 2005) but it can give access to those resources to startups. Beyond the need for breakthrough innovation (O'Connor & Rice, 2013), established firms are also building relationships with future suppliers and partners, encouraging enterprising thinking and importing a sense of dynamism and entrepreneurial impulses.

Accelerator programs provide a potential innovation model for established companies. When a company uses an accelerator to achieve a desired business outcome, either through engaging the services of another organization or managing it internally, this is specifically a "corporate accelerator" (Hochberg, 2015, p. 25). However, although accelerator programs might be successful in the open startup

marketplace, organizational managers and leaders need to consider whether this approach and its techniques are transferable into the corporate context (Pawson & Tilley, 2004, p. 33). The objective of this paper therefore is to determine the key features of accelerators when implemented in a corporate context and to critically assess how they are intended to function. Using a program evaluation framework, we aim to provide practical information to assist stakeholders (Chen, 2006). We do not report on success rates or actual achieved outcomes.

We believe this research adds to our understanding of this particular approach to corporate innovation. Our main research questions therefore are as follows:

- What are the essential and non-essential features of corporate accelerator programs?

- What is the underlying reasoning, or "program theory" behind this approach to open innovation?

Data collection has taken the form of an extensive literature review and 22 semi-structured interviews with the key stakeholders involved in corporate accelerator programs, including startup members and owners, innovation and senior managers of established firms, and the managers of accelerator companies.

1.1 | Background

There is no standard definition of accelerator programs, but from the literature we have reviewed, we conclude in this paper that the core attribute is processual rather than structural, as shown in Figure 1. Accelerator programs need not necessarily be located in a particular place such as an incubator, use particular methods, be organized into cohorts, involve equity, or even be tied to specific business outcomes (although these are features which may influence the success of the accelerator). But they always seek to speed up the early stages of the startup process, identifying and weeding out ideas that are unlikely to succeed or scale up.

Accelerator programs are usually characterized by an open application process in which anyone with a business idea can apply. Most applicants are startup teams, young, growth-oriented businesses that aim to produce rapidly scalable business models. They demonstrate high levels of innovation, increases in revenue, and employment (Blank & Dorf, 2012). The organization conducting the accelerator invests in such companies, typically in exchange for equity, at pre-seed or seed stage. Accelerators invite or select small groups of entrepreneurs and startups to compete in "boot camps" or "hackathons" and provide resources, education, mentoring and access to industry networks during these fixed-term events. This concentration of resources and expertise into a time-bound disciplined business development process allows a more rapid recognition of promising business ideas.

1.2 | Corporate accelerators

Examples of corporate accelerators are Disney Accelerator (Techstars), Microsoft Ventures Accelerator Tel Aviv, Axel Springer Plug&Play, Barclays Accelerator (Techstars), Nike+ Accelerator (Techstars) and ProSiebenSat.1 Accelerator. There are differences to "normal" accelerators: being able to manage these corporate programs may be of great importance to organizational success. Corporate accelerators are open innovation interventions 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. The focus here lies on disruptive innovation which is oriented towards creating and exploiting new markets and satisfying new customer needs (Christensen & Rayner, 2013).

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 research papers and reports that deal with the phenomenon (Battistella, De Toni, & Pessot, 2017; Clarysse, Wright, & Van Hove, 2015; Dee, Gill, Weinberg, & McTavish, 2015; Hochberg, 2015; Jackson & Richter, 2017; Jackson, Richter, & Schildhauer, 2017; Kanbach & Stubner, 2016; Kohler, 2016; Weiblen & Chesbrough, 2015). Heinemann (2015) shows that corporate accelerators are
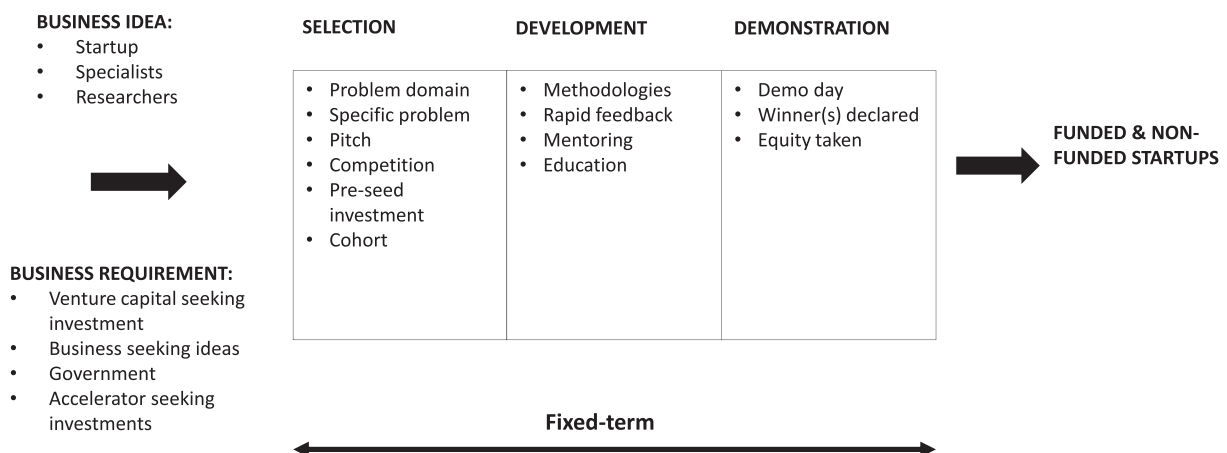
BUSINESS IDEA:
- Startup
- Specialists
- Researchers

BUSINESS REQUIREMENT:
- Venture capital seeking investment
- Business seeking ideas
- Government
- Accelerator seeking investments

SELECTION
- Problem domain
- Specific problem
- Pitch
- Competition
- Pre-seed investment
- Cohort

DEVELOPMENT
- Methodologies
- Rapid feedback
- Mentoring
- Education

DEMONSTRATION
- Demo day
- Winner(s) declared
- Equity taken

FUNDED & NON-FUNDED STARTUPS

Fixed-term

FIGURE 1 Model of business accelerator process

mostly established by information-related companies that are already investing in venture capital. The main 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).

A corporate accelerator is structurally similar to a business, seed or startup accelerator, but focuses on insourcing external innovation (open innovation) or identifying internal innovation from its own employees to stimulate overall corporate creativity. In contrast, seed, business and startup accelerators are mainly investment-driven, whilst the few public accelerators are mostly concerned with building an innovation or entrepreneurial ecosystem and run with government support (Clarysse et al., 2015).

1.3 | Theoretical framework

Program theory (Chen, 1990, 2006; Pawson & Tilley, 2004) is particularly useful in the initial stages of program planning and implementation, as it supports articulation of the reasoning why a program or program feature will work as intended. Our purpose is to provide clarity on the features of corporate accelerator programs, and to articulate the theory behind why these programs might provide a solution to corporate innovation challenges. As corporate accelerator programs are fairly new open innovation instruments for established firms, we consider program theory to be a useful approach to answering our main research questions.

Program theory, also known as program logic (Funnell, 1997), theory-based evaluation (Weiss, 1998), theory-driven evaluation (Chen, 1990), or program-theory-driven evaluation science (Donaldson, 2005), explains how an intervention in the form of a program can be expected to lead to an intended result. Program theory can be used as a conceptual framework to bring together existing evidence from multiple interventions and evaluations. As Astbury and Leeuw (2010) write:

> For the theory-driven evaluator, programs are embodiments of theories in at least two ways. First, they comprise an expectation that the introduction of a program or policy intervention will help ameliorate a recurring problem. Second, they involve an assumption or set of assumptions about how and why program activities and resources will bring about change for the better. (p. 364)

In the case of accelerator programs, the key problem to be ameliorated is that the radical innovations, which are increasingly needed to gain competitive advantage, originate with market entrants rather than with incumbents. Accelerator programs, and their features, are interventions intended to address this challenge. As little is known about how these programs function, we adopt an approach known as "formative evaluation" to prospectively inquire into how these programs have their intended effect.

According to Chen (2006), a program theory is made up of an action model and a change model. The action model of any program "provides a blueprint to organize program activities and to activate and energize the change model for achieving program goals" (Chen, 2006, p. 77). The action model is also known as a program feature, or "measure". This is the focus of our first research question, to establish the program features, interventions and protocols that characterize corporate accelerators. Using a standard taxonomy for programs, covering such components as strategy, resources, roles and structure, we analyzed data from stakeholders engaged in this approach to innovation in order to understand the underlying delivery protocols of these programs (Gomm, 2000; Pawson & Tilley, 2004, p. 33). This taxonomy allows us to systematically identify the interventions of the program which make up the program theory.

The change model, on the other hand, "provides a basis for developing the action model". Pawson and Tilley call this the "programme mechanism". Behind each activity and intervention within the action model are assumptions within the change model that justify the inclusion of that intervention. This is usually an assumption of the efficacy and presence of a mechanism or causal sequence that will allow the intervention to contribute to the desired outcome. Specifying the action model for corporate accelerators in the form of its features to answer our first research question allows us to propose mechanisms that may be triggered by the intervention and how they will contribute to the desired outcome. This is the focus of our second research question.

2 | METHODOLOGY

2.1 | Realism

Underpinning theory-driven, formative evaluation is the belief that there are real, existing structures, and mechanisms that, under certain conditions, will lead to the desired outcomes (Pawson & Tilley, 1997). These structures and mechanisms are persistent and "transitive", that is they exist beyond the subjectivity or beliefs of any individual (Bhaskar, 1978). To this extent, they are "real". Whilst religion is a social construct, for example, we do not invent it: it is one we are born into and which is observable not directly but through human behavior such as prayer and church attendance (Archer, 1988, 1995). Mechanisms "describe what it is about programmes and interventions that bring about any effects. Mechanisms are often hidden, rather as the workings of a clock cannot be seen but drive the patterned movements of the hands" (Pawson & Tilley, 2004, p. 6). Program mechanisms "thus explicate the logic of an intervention; they trace the destiny of a programme theory, they pinpoint the ways in which the resources on offer may permeate into the reasoning of the subjects" (Pawson & Tilley, 2004, p. 7).

2.2 | Abduction

These mechanisms and structures are often seen by their effects rather than being directly observed, so the "observability criterion" typical of empiricism does not apply. If we wish to investigate them, we must apply processes that let us propose and explore causes that

we do not experience directly. In the emergent phase of theory building, such as formative evaluation, these processes are typically abductive, that is they proceed from the phenomenon or surprise that requires explanation, by inference to the "best explanation" (Lipton, 2003). To abduct is:

> ... to interpret and recontextualise individual phenomena within a conceptual framework or a set of ideas. To be able to understand something in a new way by observing and interpreting this something in a new conceptual framework. Modell (2009, p. 213) observes that "abduction does not move directly from empirical observations to theoretical inferences, as is the case in purely inductive research, but relies heavily on theories as mediators for deriving explanations. (Eastwood, Jalaludin, & Kemp, 2014, p. 3)

In Figure 2, we use the Chen (2006) explication of the change model as "Intervention—Determination—Outcome" to demonstrate how the various components of an accelerator program (such as the strategy, resources and processes) will be enabled by certain mechanisms (such as involved leadership or experienced mentors) and hopefully lead to the desired changes in the innovation capability of the firm (such as new products or an improved innovation culture). In this paper, we have used abduction as a means to reflect upon interview data, alternative theories and background literature to identify likely "determination" mechanisms that a particular intervention might rely upon. We use Gomm's (2000) taxonomy to organize the features of accelerator programs.

2.3 | Data collection and analysis

To validate and extend the research literature, three researchers conducted extensive interviews with 11 organizations using some form of corporate accelerator to boost their innovation performance, as well as six managers of accelerator programs used by large companies and five

startups involved in a corporate accelerator program (see Table 1). Interviews lasted between 1 and 2 hours. We asked questions pertaining to the objectives in using the accelerator, the structure of the accelerator, the processes involved, and the resources allocated. We also asked startups how they perceived the work in a corporate accelerator, the structures, the processes, the relationship and the resources provided.

We performed interpretive textual content analysis of the interview data, sorting the responses under the predefined key features of program management as defined in the program taxonomy of Gomm (2000). This taxonomy describes the essential intervention features as being those of strategy, resources, procedures, organizational structure, roles, the environment, and metrics. In Section 3, under each of these headings, we present the evidence from the data that introduces new characteristics of corporate accelerators or supports or contradicts the existing literature.

After identifying the necessary and common features of corporate accelerator programs, we reflected upon the conditions under which accelerators operate and the "success factors" which might be required to make the features get traction. This was an abductive process which used knowledge from grey and peer-reviewed literature on incubators, systems development, innovation systems, and creativity processes. The process was carried out in group meetings by the researchers, utilizing a variety of techniques such as brainstorming, Ishikawa diagrams and critical success factor analysis.

3 | FINDINGS

3.1 | Strategy

The strategies of the firms for which corporate accelerators are implemented vary: it may be for early recognition of potential disruptors, to identify creative staff or partners, to identify and develop new products and services, or to improve the firm's innovation culture.

The divergent strategic goals of the special case of corporate accelerators require the adoption of different resources, procedures
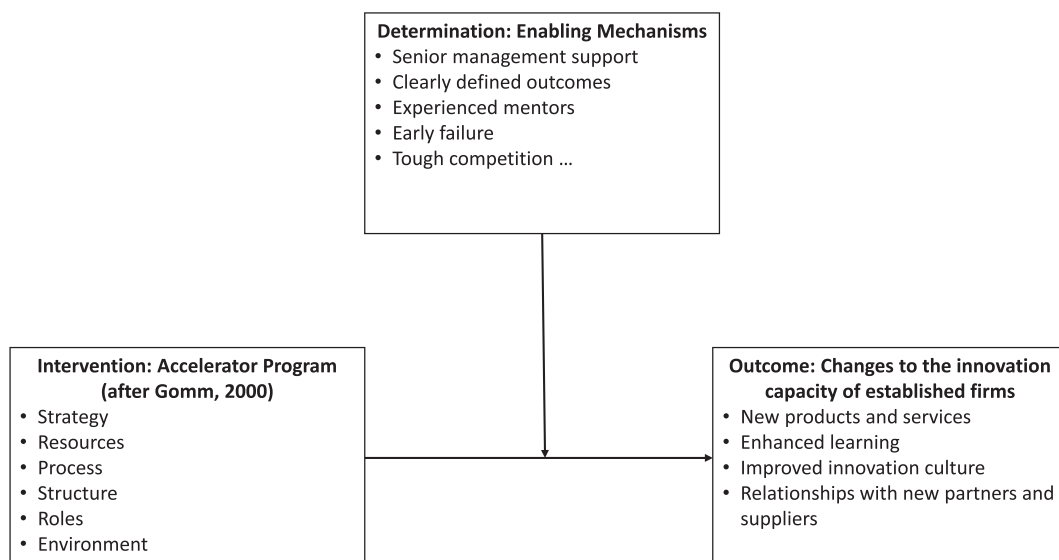

FIGURE 2 Intervention—Determination—Outcome diagram for accelerator programs (after Chen, 2006)0

TABLE 1 Interview participants

Participant role	Industry/Innovation	No. of employees
CEO	Accelerator services	15
Lead Technology Officer	Accelerator services	3
CEO	Accelerator services	3
Mentor	Accelerator services	500
CEO	Accelerator services	20
CEO	Accelerator services	10
Operations Manager	Business incubator	20
Project leader in enterprise strategy	Rail transport	>300,000
Project leader in mobility solution	Car manufacturing	>50,000
Chief strategist	Airline industry	>100,000
Innovation manager	Household products manufacturing	>10,000
Managing Director, European region	Global manufacturing conglomerate	>100,000
Innovation Manager	Global manufacturing conglomerate	>100,000
Consultant and Startup Mentor	Consulting	10
Innovation and knowledge manager	Natural resources	1,000
Innovation Manager	Insurance	1,000
Project manager, innovation	Insurance	1,000
Startup founder	Media	16
Startup founder	Networks and analytics	12
Startup founder	Information management	2
Startup founder	Information management	3
Startup founder	Information management	2

and structures to run their programs. Evidence from our interviews supports the variety of strategic objectives, seeking brand enhancement, community contribution, outside-in innovation impulses, new business creation, and the recognition of new threats. However, most of the companies follow the overarching goal of enhancing their own innovation capacity. Table 2 presents the strategic objectives of the case study participants with supporting interview data.

3.2 | Resources provided

The interview data revealed varied approaches to resource provision by corporate accelerator programs: some organizations require equity,

some do not, with most companies providing staff, money, accommodation, and access to intellectual capital and technologies. Table 3 presents the resources provided by the case study participants with supporting interview data.

3.3 | Procedures

The interview data confirmed the general processes and focus applied within corporate accelerators matched that of commercial accelerators. Table 4 presents the procedures used by the case study participants with supporting interview data.

TABLE 2 Strategy

Strategic objective in using a corporate accelerator	Sample interview data
Supporting the development of an innovative community outside the boundaries of the firm as a social good	*"It was a matter of how do we co-contribute to that community and do something for ourselves"* (Company 1)
Enhancing the company's brand through associating it with the dynamism, creativity and "cool" of the startup community	*"Our brand with this particular community is much stronger than it was prior to when we started"* (Company 1)
Improving the company's innovation capability by pulling external ideas, approaches and attitudes from the outside-in	*"Another way of thinking about it is that this is only one part of our innovation strategy. It's not been articulated, but this is an external process, bringing external knowledge inside"* (Company 4) *"... part of this is we are not innovative internally. We want to become more innovative – we'd like you guys to help us in doing that"* (Company 5)
Using the startups to identify challenges and threats from competitors and over-the-horizon innovations and disruptors	*"... helping their companies make new businesses to guard against issues they may have in the future"* (Company 2) *"We help the teams actually do what we think is a massive mindset shift away from just scale and growth towards discovery and learning"* (Company 2)
Creating new businesses and business models to provide new avenues to growth	*"We create new businesses that disrupt and cannibalize our own existing business—but we must do this!"* (Company 6)

TABLE 3 Resources

Resources provided to the corporate accelerator	Sample interview data
Funding of the startup is done through participation of the established firm in equity	"Everyone's skeptical these days; they see a program like this and they assume that the organization's doing it for some selfish reason, so people are asking those sort of questions: 'do you guys take equity? Do you guys then control my IP?'" (Company 8)
Funding of the startup is done through the established firm for a defined period but no equity taken, leaving open the possibility of future participation	"So we were offering seed funding without any requirement for equity, without any requirement that we took IP" (Company 9)
The established firm provides historical data, physical resources, and working infrastructure	"Our way to use startups is to kick off on the basis of our large pool of data, our resources, and business models and ideas add-ons to our business" (Company 4)
The established firm provides accommodation, guidance and advice	"Resources are people, hired people, money, the right accommodation and location and vibe, and senior management attention" (Company 2)

TABLE 4 Procedures

Procedures applied to the operations of the corporate accelerator	Sample interview data
A competitive pitch event is held, often accessible to the public, in which the established firm (and often other experienced entrepreneurs) decide upon a winning idea and team that will be supported	"We sat there and we invited people to do a one-minute pitch of their ideas. And I sat back and I listened to forty-one pitches and I immediately ruled out about seventy per cent of them because they hadn't thought through any of the commercial reality, the risk management and all the rest of it" (Company 1)
The lean startup method is used to force a focus on customer validation, experimentation and testing in order to fail wrong ideas early	"That whole thing has been backed up by the lean start-up movement which is very clear in its belief that start-ups need to learn their way through and that Plan A is always wrong" (Company 2)
The lean canvas method is often used for business planning and to provide the basis of a competitive pitch	"So we submitted a lean canvas one week and then a three-minute video pitch with SlideDeck online the next week" (Company 8)
Review and critique of the business idea is done from the perspective of the potential for a viable business	"So we do a lot of work designing and supporting accelerators today, but our core proposition is how do you move an idea into a validated business model?" (Company 2)
The processes focus on rapid throughput and planning for quick pivots and breakthroughs	"Speed is the critical thing, to reduce development speed by a factor of about 10" (Company 4)

3.4 | Organizational and institutional structures

The interview data revealed that whilst most organizations chose a partner to run the corporate accelerator, some kept it in-house. However, although some organizations established an internal accelerator, there was still a strict organizational separation between the established company and the accelerator program. Table 5 presents the organizational structures established by the case study participants with supporting interview data.

3.5 | Key roles

Like the corporate venture capital arm of a company, the accelerator functions as an intermediary between the established company and the new venture. It provides resources and a structured program to small teams (rather than individual founders) with technical backgrounds (Miller & Bound, 2011). Specific roles, occupied by participants from the three participating groups, are needed to achieve this higher, more explicit level of service:

TABLE 5 Structures

Organizational structure established to run the accelerator	Sample interview data
The established firm can run an internal embedded accelerator	"We have an internal innovation group, an internal business accelerator—we want the organization to be taken on the journey as well, so we want a brain drain inwards" (Company 4)
The established firm can commission an external partner with specific expertise to run an accelerator program on its behalf	"What we chose to do was to actually use people who know their stuff better than us, the geeks of the world, and get them to mentor the guys" (Company 1)
The established firm can run an accelerator in a subsidiary company	"We set up our own daughter company to run accelerator programs" (Company 6)
The established firm can partner with many players that provide skills in different areas	"The enabling of this, there was a huge dependency and partnership with the Accelerator from the Founders Institute. So it's been said already, but for us having good partners with good intent made life a lot easier" (Company 8)

- Accelerator managers, who often have an experienced startup background and tend to select startups that have the potential to be successful: They generally plan, organize and oversee the functioning of the program.

- Experienced mentors, experts and investors, usually provided by the accelerator: these people have skills in business planning, entrepreneurship, law, technology and marketing. In a corporate accelerator, this extends to specialists within the organization who have deep knowledge of proprietary technologies or market intelligence.

- The startup members: corporate accelerators prefer teams to individuals.

- Corporate accountabilities, such as project managers, project sponsors, steering committees and so on: Senior "C-suite" management involvement, for example, appears to be important in attempts at open innovation (Chesbrough & Crowther, 2006).

Related job titles within the established firms included project leader, enterprise strategy and futures research, company consultant, startup mentor, accelerator manager, co-creator and chief strategist, innovation manager digital business models, managing director, chief instigator or internal strategic design consultant.

3.6 | Environmental influences

Some of the environmental influences on corporate accelerators revealed in the interview data included adapting internal acceptance of risk and failure, a realization of the need to change, and the need for outside help. Table 6 presents the environmental factors influencing the case study participants with supporting interview data.

3.7 | Metrics and outputs measurement

Performance metrics (e.g., key performance indicators, KPI) that are important for the conduct of corporate accelerators are almost completely absent, no doubt due to the confidentiality of outcomes. A company investing in such a program will likely require some evidence of return on investment which goes beyond existing accelerator metrics, which mainly follow the strategic goals of an investment-led accelerator. A corporate accelerator might be not only interested in measuring the startup's satisfaction and its commercial success but also the contribution to the firm strategy, the establishment of new

markets, or market share, the cost effectiveness of the program, and the value of what has been learned.

One stakeholder put it as follows: "There must be metrics because large enterprises need to be able to measure what they are doing otherwise they feel like they are just throwing money into the void. So the whole lean startup approach is helpful here because it includes this whole idea of innovation accounting where you are measuring the emergence of customer value rather than profit and scale at this stage."

This paucity was reflected in the interview data, with some organizations insisting on KPIs and others feeling they were useless. Table 7 presents the attitudes to performance measurement of the case study participants with supporting interview data.

4 | DISCUSSION: THE FEATURES AND ENABLING MECHANISMS OF CORPORATE ACCELERATORS

Combining the results from the literature review and the interviews, we were able to answer our first research question and establish the essential and non-essential features of corporate accelerators (see Table 8). These are contained in the first two columns as components of the "action model". We have excluded the standard features of non-corporate accelerators and only included those features unique to corporate accelerators. The final column in Table 8 under "change model", "proposed enabling mechanisms", suggests the necessary contextual mechanisms which need to be engaged in order for these features to contribute to the success of the accelerator.

The proposed program mechanisms in Table 8 are by no means new, and many might be familiar as they are described in disciplines such as information systems development or innovation and collaboration studies. But the contribution of this paper has been the application of the abductive process to connect these real, underlying mechanisms to the program features of corporate accelerators. They

TABLE 7 Outputs and metrics

Innovation KPIs:	"Innovation is linked to KPIS" (Company 4)
KPI areas:	*"KPIs are targets like: 5 projects, 3 prototypes, 5 partnerships, etc." (Company 10)*
KPIs irrelevant:	*"KPIS are not worth much" (Company 6)*

KPI: key performance indicator

TABLE 6 Environmental influences

Environmental factors influencing the choice of the corporate accelerator	Sample interview data
The established company has a low level of internal innovation	*"There was getting the business comfortable with the fact that we were unlikely to find inspiration internally … we said to the community 'part of this is we are not innovative internally. We want to become more innovative—we'd like you guys to help us in doing that'"* (Company 1)
The established company operates at a pace that is too slow to generate innovation quickly enough	*"What the accelerator brings is a disassociation from the rhythms of the mother organization" (Company 9)*
Proponents of innovation from outside the firm are needed to give legitimacy to innovation efforts	*"A prophet in their own country is often not understood—but external people seem to have more influence" (Company 3)*
The established company does not provide the ambience or space to allow innovation to flourish	*"You need space, freedom, to explore—and take the credit" (Company 4)*

TABLE 8 Unique features of corporate accelerators

Program feature	Action model Essential features of corporate accelerators	Common but not essential features of corporate accelerators	Change model Proposed enabling structures and mechanisms
Strategy	• Directed at strategic objectives of the firm or department, but strategic goals are often varied (e.g., product development, brand enhancement often as by-product, learning, early warning)	• Corporate strategy can be emergent through new learning	• A clear and compelling purpose articulated to direct the program will sustain commitment and engagement of the organization with the program. A strategy for implementing not only innovation but innovation based on corporate accelerators is necessary (Vanhaverbeke, Roijakkers, Lorenz, & Chesbrough, 2017)
Resource	• Process initiated and funded by an established firm • improved access to knowledge, networks, customers, internal staff, processes for the startup	• Offers company-internal resources and expertise to the startups	• Active senior management involvement and oversight will ensure the provision of resources and support to the program (Standing et al., 2016)
Procedure	• Established firm determines content, duration, form of the accelerator	• Outcomes, process and events may be kept confidential	• A competition for positions, a fixed duration, lean methodologies and rapid feedback in a corporate accelerator is more likely to result in high-achieving, teams of startups being selected, who will be compatible with the firm (Jackson et al., 2017)
Structure	• Organizationally separated from established organization although it is an internal program	• Can be in-house, outsourced, run in collaboration with other firms • Can be owned by business department or innovation group	• An accelerator which is removed from the everyday load of corporate bureaucracy and interference will move at a faster pace and with greater agility towards the goal of radical innovation. (Chesbrough, Vanhaverbeke, & West, 2006)
Roles	• Will have a company project manager/responsible person	• Participants can come from within or outside the firm • May have senior management attention and governance	• A well-managed accelerator, with experienced personnel and mentors from outside and inside the company, will provide relevant and useful guidance and inspiration to startups • Startups who are given autonomy and treated as partners not subcontractors are more likely to remain committed to mutual goals and maintain the higher levels of energy to achieve radical innovation (Jackson & Richter, 2017)
Environment	• Learning from knowledge available outside their own boundaries is critical		• A positive, supportive corporate culture will facilitate interactions and enable the corporation to make sense of the emerging innovations • An organization with high absorptive capacity (Cohen & Levinthal, 1990) will be more capable of internalizing new, potentially disruptive, ideas (West & Bogers, 2014)
Metrics and outputs	• Clear customer focus and control through tests of customer fit	Not necessarily considered important Can include innovation KPIs (products, services, projects, learning)	• Only ideas that can be sold to investors or customers as business cases survive (Ries, 2011). An organization needs to create measures for these purposes

emphasize that implementing a corporate accelerator requires more than the establishment of program features: Attention must be paid to contextual elements and structures which will facilitate success.

Consideration of the essential and non-essential but common features of corporate accelerator programs reveals the overall theory or logic behind these highly competitive and tightly controlled interventions. An accelerator program functions as a performance filter which excludes likely failures and blind alleys very early in the innovation discovery process. The uncertainty, exploration and fuzziness usually associated with innovation is reduced through the application of strict processes, assessment criteria and decision points within the corporate accelerator program, which allows firms to keep the creativity of startups under control and directed in the interests of the firm.

An established company can extract a high number of innovations from the creative and enthusiastic participants, who often originate from a wide range of educational and industrial environments. Corporate accelerators create a controlled environment away from the functional and line management of the firm. Risk and the escalation of commitment are simpler to manage. It is only when the ideas take on a practicable shape that the companies become more involved. At this stage they reduce the number of ideas which do not fit their interests. Beginning the process with a high number of startups increases the recognition of potential opportunities in a competitive environment full of innovations, but the process whittles them down to a manageable number that have been selected on the basis of objective criteria. Thus an accelerator program acts as an interface between the firm and

startups, creating a highly competitive and controlled environment that allows the firms to select startup ideas for long-term exploitation or collaboration.

As a result of this research we can present some "take-home" recommendations for managers planning to establish corporate accelerator programs:

1. **Strategy**: Articulate a clear strategy for open innovation activities with startups. Define the goal(s) of the corporate accelerator program. Avoid conflicting goals and be aware that resources, procedures, structure, roles, environment, and metrics should be established according to a clear strategy.

2. **Resources**: Take cooperation with startups seriously or don't do it. Senior management commitment is key to successful cooperation.

3. **Procedures**: Study the procedures of business or seed accelerators. Adopt key success factors such as a competitive selection process, intensive mentoring, and a fixed duration. Adopt lean methodologies (Ries, 2011), insist on rapid feedback, and be prepared to change direction.

4. **Structure**: Separate the program from the daily routines of the core business to allow for radical and disruptive innovations to grow. But make sure that your corporation is able to absorb innovation as it becomes marketable.

5. **Roles:** Treat startups not as subcontractors but as partners in the process. Engage experienced personnel from inside and outside the company that are experienced in working with radical innovation.

6. **Environment:** Make sure your culture and processes are amenable to open innovation and that sufficient absorptive capacity is present.

7. **Metrics and outcomes:** Create measures that match your purposes. Focus these measures on your strategy and communicate these measures to your partners.

5 | CONCLUSION

The financing, implementation and integration of innovation and new business forms by established firms have undergone great change over the past years. The objectives of firms in doing this range from public relations and employer branding, forming new partnerships and networks and investments, to the actual development of innovative products or new markets. Most firms engaging with startups seem to be especially interested in enhancing their overall innovation capacity, although public relations and branding are also seen as useful by-products.

The results from the general case of accelerators suggest they might be a useful program for corporations seeking to improve their innovation performance. 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.

In this paper we have identified the most important processes and structural elements that make up the special case of corporate accelerator programs, though gaps remain in our understanding of their practical effectiveness, operations and outcomes. We have also described the general theory behind these programs, namely as a highly competitive and tightly managed performance filter, which can exploit the energy and creativity of startups in the interests of established firms. In identifying the specific program elements behind these accelerators, we were also able to propose mechanisms which may enable those program elements to have their desired effect. Future research is needed to examine the efficacy of these elements and under what conditions they contribute to the overall success of corporate accelerator programs.

ORCID

Nancy Richter http://orcid.org/0000-0002-9062-9106

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