

Article

# Edtech accelerator as an ecosystem builder

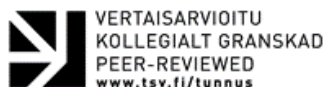
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**Citation:** Kairikko, A. & Dhaliwal, S. (2021) Edtech accelerator as an ecosystem builder. *HHBIC 2020*, 17–18.11.2020, Online.  
<http://urn.fi/URN:NBN:fi-fe2021101451006>

Date of publishing: 18.03.2023



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**Abstract:** Entrepreneurial ecosystems have attracted increasing attention in entrepreneurship research. Even though the phenomenon is extensively studied and ecosystems are well mapped by previous research, there are still understudied areas like the question, how do ecosystems emerge and develop? The purpose of this paper is to approach the development of an entrepreneurial ecosystem through the role of an accelerator. Thus, this research addresses, in particular, the question how an accelerator contributes to the formation of an ecosystem. The accelerators are reviewed and compared with similar support mechanisms, in terms of programs they provide and through their role as an ecosystem builder. Literature on accelerators is synthesized by taking into consideration both perspectives: accelerators offering cohort-based programs and accelerators as ecosystem builders. The empirical data for this paper was collected longitudinally and the empirical part analyses an emerging edtech accelerator based on rich, in-depth data from various sources. Empirical findings from an edtech accelerator illustrate the role of an accelerator as an ecosystem builder. This study contributes to the growing literature on accelerators by extending knowledge on the role of accelerators as ecosystem builders.

**Keywords:** Accelerator, ecosystem, edtech, qualitative research

## 1 Introduction

This paper examines the role of accelerators as ecosystem builders. The concept of ecosystems is widely studied, especially the top-down approaches, which focus on attributes that constitute ecosystems. However, the bottom-up approach, in other words practices and interactions at entrepreneurial level have received less attention (Spigel, 2018). Accelerators, in turn, are mechanisms to support entrepreneurial growth by running competitive cohort-based programs and there are still several understudied areas regarding accelerators (Cohen, 2013; Pauwels et al., 2016). This study approaches accelerators from the ecosystem perspective. Therefore, the objective of this research is to increase understanding on the role of an accelerator in an emerging ecosystem.

This study is conducted in a single setting as a longitudinal study in a Finnish edtech accelerator. This resonates well with the calls to extend knowledge on startups in different contexts and understand the diversity of accelerators. The Helsinki area, and Finland in general, have seen a startup boom since the 2010s and thus, this area provides a fruitful ground for studying startups. Some indicators that manifest the boom are, for example, the increase of the total sum of foreign investments in local startups almost by fifteenfold from 2010 to 2018 (Finnish Venture Capital Association, 2019). Furthermore, the greater area of Helsinki ranked top in the dimension 'local connectedness' among the startup ecosystems globally (Startup Genome, 2018) and the SLUSH event has grown from a small voluntary driven event to one of the major startup events in Europe. Moreover, a mapping of Finnish startup support services (Lahtinen et al., 2016) identified 116 different startup support programs or services like startup hubs or communities, pre-incubators or entrepreneurship programs, incubators or pre-accelerator, co-working spaces and venture accelerators; most of them established after 2010.

This paper is structured as follows. The discussion starts by looking at accelerators and similar mechanisms by utilizing two streams of literature: entrepreneurship and innovation. Thereafter, the methodological choices are discussed before moving to the empirical findings and discussion.

## **2 Positioning accelerators in entrepreneurial ecosystems**

The following review on accelerators consists of three parts: comparing accelerators with closely related concepts, classifying the various definitions of accelerators and finally, positioning them in entrepreneurial ecosystems. The section is finished with a synthesizing illustration, which combines the discussed perspectives.

The studies on the evolution of the business incubation (Bruneel et al., 2012; Mian et al., 2016) demonstrate the closeness of accelerators and incubators. The latter has been studied since the 1980s (Hackett & Dilts, 2004). However, despite the similarities and overlapping use of terminology, incubators are characterized by physical space and unlimited duration whereas accelerators are cohort-based with limited duration and clearly connected with the growth in digital economy (Cohen & Hochberg, 2014; Hathaway, 2016; Isabelle, 2013; Miller & Bound, 2011; Pauwels et al., 2016; Surlemont et al., 2002).

There is a wide spectrum of support mechanisms for startups like angel networks, business competitions, co-working spaces, hackaton/startup weekends, entrepreneurship courses, mentoring schemes, social venture academies or seed funds (Miller & Bound, 2011). However, there appears to be confusion since the term accelerator is used synonymously with other closely related concepts (Cohen & Hochberg, 2014). Incubators, which are a closely related concept, have been widely studied in comparison to accelerators. Incubators are initiated by policy makers, private investors, universities, corporates and research institutes and the studies on incubators focus on e.g. characteristics, types and evolution of the phenomenon.

Accelerators are a 'new generation incubation model'; the first accelerator dates back to 2005 whereas incubators have been established since the 1980s (Pauwels et al., 2016). Regarding the evolution, Mian et al. (2016) distinguish three waves in the incubator development. The early versions were mostly providing

physical premises, in the second wave, the services were more versatile and advanced and the third wave seems to bring in the specialization. Similarly, Bruneel et al. (2012) argue there are three generations of business incubators. Thus, the phenomenon has already longer routes in the incubators but the newest form of evolutionary process, including accelerators, is still at the early stages.

Based on studies and reports (Cohen & Hochberg, 2014; Hathaway, 2016; Isabelle, 2013; Kabbara, 2016; Miller & Bound, 2011; Pauwels et al., 2016; Surlmont et al., 2002) there is a table below, which is a comparative summary of incubators and accelerators. There are clear and numerous differences between these types of entrepreneurial stimulating mechanisms even though the concepts are partly overlapping as well as table 1 illustrates.

<b>Comparative feature</b>	<b>Incubators</b>	<b>Accelerators</b>
Duration	Long-term	Short-term
Cohorts	No, sustainable	Yes, cohort based, peer support
Purpose	Economic development	Growth and ROI
Business Model	Non-profit, rent	Investment, profit, non-profit
Selection	Non-competitive	Competitive, cyclical, selective
Venture stage	Early or late	Early
Selection criteria	Individual/team	Focus on teams
Venture Location	On-site	Usually on-site
Type of sectors	Sectors with longer time to market	Sectors with shorter time to market
Education offered	Ad hoc	Seminars
Mentorship	Minimal, tactical	Intense
The stage in the evolutionary process	since 1980s, several waves and generations of incubators, the accelerator also	fairly new phenomenon, since 2005

Table 1: A comparative summary of key features regarding incubators and accelerators

The definition of accelerators is, on one hand, through the program offered for the selected cohorts, for example the definition for accelerators by Cohen and Hochberg (2014, p. 4) is as follows: "A fixed-term, cohort-based program, including mentorship and educational components that culminates in a public pitch event or demo-day".

Alternatively, the definition of accelerators follows their role as an ecosystem creator or intermediary, e.g. Drori and Wright (2018, p. 1) take the ecosystem perspective and define accelerators as follows:

"An accelerator is a generic organizational form that aims to stimulate entrepreneurship. It is structured to provide an intensive, limited-period educational program, including mentoring and networking for the cohort of startup participants selected for each program, to improve their ability to attract investment following the demo day at the end of program. Accelerators are organizations that serve as gatekeepers and validators of promising business

innovations through their embeddedness in their respective ecosystems and thus, take an active and salient role in socio-economic and technological advancement.”

The discussion above emphasizes the characteristics of the program and the difference between accelerator and incubators. There are also approaches (Autio et al., 2018; Goswami et al., 2018; Hathaway, 2016; Spigel, 2017), which stress the match making position of the accelerators in the interaction between startups and the stakeholders. The ecosystem approach also stresses the accelerator is not only beneficial for the startup ventures but also for the wider community (Hathaway, 2016).

Entrepreneurial ecosystems are combinations of social, political, economic, and cultural elements within a region supporting and encouraging growth and development of startups (Isenberg, 2011; Spigel, 2017). They differ from clusters by the entrepreneurial opportunity discovery and pursuit (Autio et al., 2018). Ecosystems are receiving growing attention as part of changes in entrepreneurship practices and developments in the digital era. The accelerators are elements in the entrepreneurial ecosystems enabling the business model experimentation and horizontal knowledge spillovers (Autio et al., 2018). Thus, the impact of accelerators is not limited to the accelerated startups.

Goswami et al. (2018) position accelerators in terms of entrepreneurial ecosystems by defining accelerators as intermediaries between startups and local ecosystems and hence, accelerators are a bridge between startups and larger entrepreneurial environment and acting through various forms of helping functions like connecting, developing, coordinating, selecting. Similarly, Hathaway (2016) stresses the positive impact on the regional entrepreneurial ecosystem and benefits to non-accelerated startups as well. Therefore, the ecosystem viewpoint does not build on the distinction between the benefits of the accelerated vs. non-accelerated ventures but rather on the benefits for the whole entrepreneurial ecosystem.

According to Spigel (2017), accelerators are positioned outside the boundaries of the company but within the regional system belonging to the material attributes of ecosystems as table 2 shows. According to him ecosystems are composed by material, social and cultural attributes and especially the emphasis is on the interplay between the attributes and the layers of the attributes and several potential configurations between the attributes. Understanding entrepreneurial activity in a region requires deep and nuanced understanding of the local features.

Type of attribute	Attribute
Cultural	Supportive culture History of entrepreneurship
Social	Worker Talent Investment Capital Networks Mentors and role models
Material	Policy and governance Universities Support services (e.g. accelerators)

	Physical infrastructure Open markets
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Table 2: Attributes of entrepreneurial ecosystems (Spigel 2017) and the position of accelerators

Spigel and Harrison (2018) separate the well-functioning and strong ecosystems from poorly functioning and weak ones by looking at the types of resources in the ecosystem and how they flow in the social networks. The ecosystem development is an on-going process.

Accelerators are a supporting mechanism to stimulate the emergence of a viable business model of startups and accelerators perceive themselves as 'actors of change' not only identifying opportunities but also facilitating their distribution (Drori & Wright, 2018). Yet, it is worth noting that accelerators are sometimes startups themselves (Bliemel et al., 2016; Goswami et al., 2018; Pauwels et al., 2016).

Pauwels et al. (2016) used the design lens and provided key building blocks and related constructs. There is a wide variety of accelerators as the discussion so far has demonstrated. One approach to classify the building blocks and constructs is in the table below.

Building block	Constructs
Program package	mentoring services, curriculum/training program, counselling services, demo days/ investor days, location services, investment opportunities
Strategic focus	industry/sector focus, geographical focus
Selection process	online open call, using externals for screening, team as primary selection criterion
Funding structure	investor funding, corporate funding, public funding, alternative revenues
Alumni relations	alumni network, post program support

Table 3: Building blocks and main constructs for accelerators (Pauwels et al., 2016)

Regarding the strategic focus, the tendency is towards the higher level of sector specificity (Drori & Wright, 2018; Isabelle, 2013; Mian et al., 2016). The portion of general accelerators is already less than half of all the accelerators (Global Accelerator Report 2016) resulting in more focused services in the program package e.g. mentors, corporate ties and teams. The quality of the mentors is a critical issue for the accelerators as the mentors play such a crucial role in the accelerator concept (European accelerator summit 2016). The focus of this study is on the accelerators with a clear strategic focus since this study focuses on an edtech accelerator.

As to the funding structure, approximately two thirds of the accelerators are for-profit and they are mostly funded by private capital from investors (Global Accelerator Report 2016). The financial sustainability may form a challenge for the accelerators (European accelerator summit 2016).

European accelerator summit (2016) argues the selection of quality startups forms another challenge for the accelerators. The more well-known accelerator, the tighter the selection process, which leads to better quality startups and more success stories, which again attract more quality startups. The maturity of the local entrepreneurial ecosystem shows in the selection process, some regions do not have a pool of quality startups. In addition, the global competition among accelerators enables the startups to apply for accelerators with a good reputation.

After the accelerator period the startups join the alumni community and the more powerful the networks to the investors and mentors, the more post program support is available. The top programs, in particular, highlight the value of alumni networks (Hochberg & Fehder, 2015).

The figure below is a synthesizing illustration of viewpoints discussed earlier, in other words, the building blocks (Pauwels et al., 2016) and the elements of the widely used definition of accelerators (Cohen & Hochberg, 2014). However, it also takes into account the ecosystem viewpoints (Drori & Wright, 2018; Goswami et al., 2018) by acknowledging the role of accelerators as bridge builders. It also refers to Spiegel (2017) and his notion of accelerators as organizations outside the boundaries of startups but within the regional system. Yet, it does not explicitly mention the different levels of ecosystem attributes and their interrelationships.

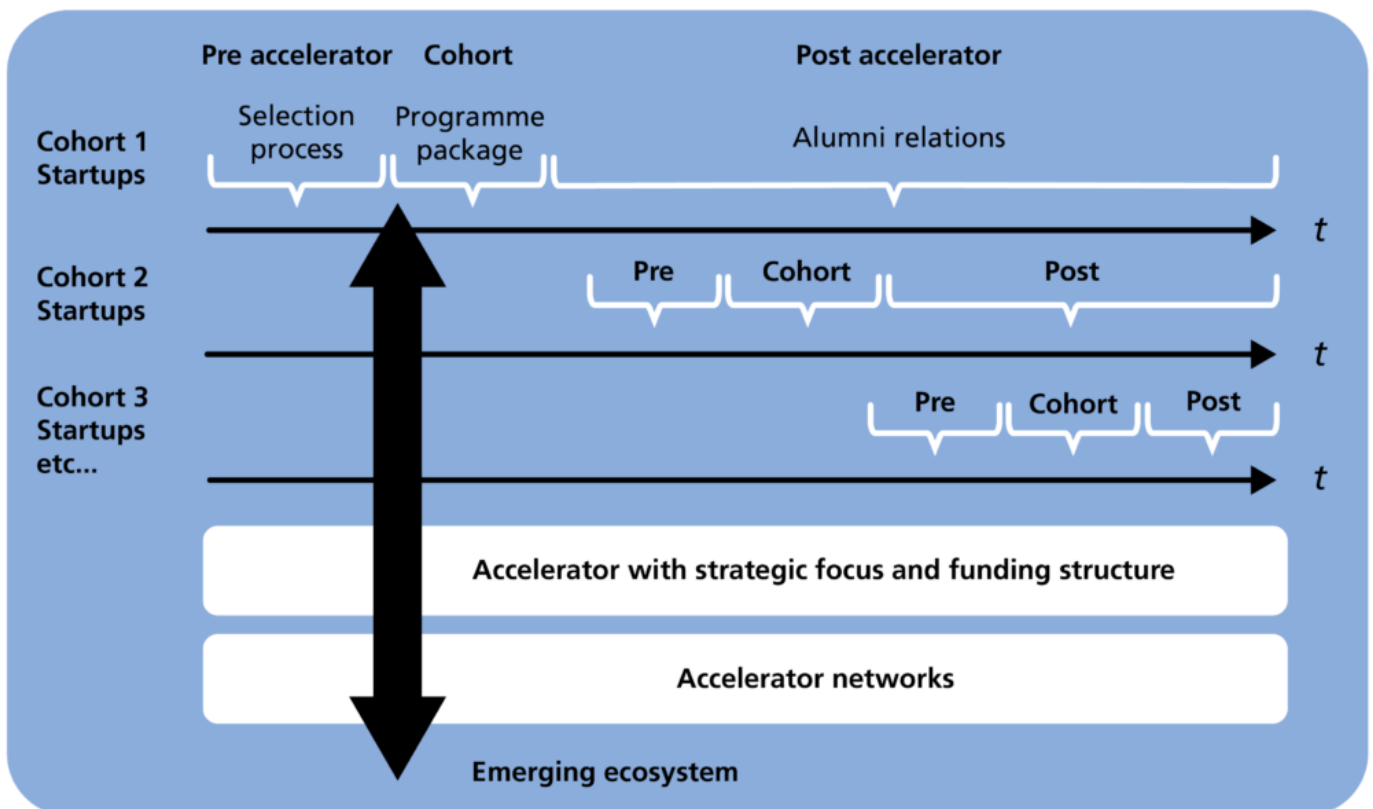


Figure 1: Synthesis of accelerators as ecosystem builders

The synthesis combines the program level (i.e. cohorts and later alumni) and additionally, it positions accelerators in the wider networks as an ecosystem builder. The programs contain phases before, during and after accelerator

programs. With each new program, the alumni community grows provided the accelerator is able to keep the alumni as active members. The role of an accelerator is the role of a bridge builder between startups – both in the cohorts and in the alumni community – and partner networks.

### **3 Methodology**

The research design was a single case study (Dyer & Wilkins, 1991; Flyvbjerg, 2006; Gummesson, 2007; Ragin, 1992). The strength of the single case is that it enables to gain in-depth knowledge and nuanced insights of the phenomenon. Following the single case approach the study was conducted within one organizational context. The data covers four years of the emerging accelerator (2016-2019). The research site is an edtech accelerator in Finland, which was established 2015 and had the first cohorts in 2016. One of the researchers of this paper started to follow the activities of the accelerators in 2016 and contacted the accelerator to have access for research purposes.

The research design was emergent and followed theoretical sampling (Gibbert & Ruigrok, 2010). Decisions regarding subsequent interviews were made alongside the increasing understanding of the phenomenon. The systematic data collection in form of interviews (46) and observations (> 50 different occasions both in the premises of the accelerator and outside the accelerator) took place from 2017 to 2018. The accelerator clearly defines itself as an ecosystem builder, and the very first steps in data collection were to define the range of key actors in the accelerator networks. The data collection through interviews evolved during the field period. The interviews included the accelerated startups, managers in the accelerator and identified partner networks in the accelerator; that is mentors, investors, corporate partners, public sector partners for co-creation, partners for internationalization and other, non-accelerated startups in the sector.

Various types of documents such as statistics and results of feedback surveys, newsletters and newspaper articles as well as social media posts covering events in the accelerator during years 2016-2019 were included in the material as well. The method of analysis has been constant comparative method (Anderson & Jack, 2015; Timmermans & Tavory, 2012) and the data was stored and analysed by utilizing Nvivo software.

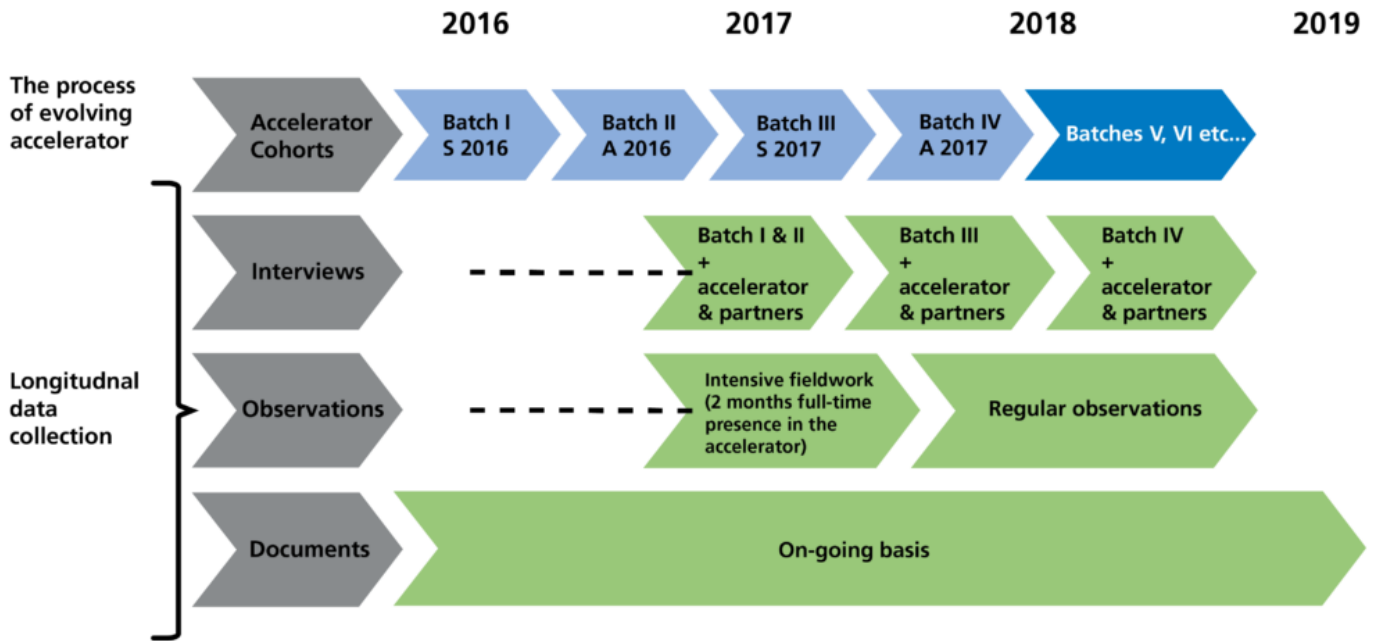


Figure 2: The process of data collection in relation to time and the development of an accelerator

#### 4 Analysis of an accelerator as an ecosystem builder

This section focuses on the analysis of the empirical data. The framework that was presented in section 2 resulted from a constant comparison of different data sources and going back and forth between the empirical data and existing literature. The findings of the analysis are positioned in the same framework at the end of this section. The analysis is divided into three sub-sections. Firstly, 'the birth of the accelerator' discusses the emergence of the accelerator in the spatial and temporal context and covers the strategic focus and funding of the accelerator. Secondly, the sub-section 'growing community' discusses the startups before (selection), during (program) and after (alumni) the participation in an accelerator program. It also discusses the networks of an accelerator. Thirdly, 'ecosystem development' highlights happenings in the whole edtech ecosystem. Finally, the role of an accelerator as an ecosystem builder is summarized by discussing the findings from the existing literature and from the empirical data.

##### 4.1 The birth of edtech accelerator

The edtech accelerator was founded in 2015 in Finland. Considering the temporal and spatial context, the time of the birth was characterized by lively discussions on startups and high-growth companies and the important role of startups in economic renewal. The startup boom in Finland manifested, for example, in the emergence of both private and public startup incubators and accelerators as well as other startup support services (Lahtinen et al., 2016).

The edtech accelerator was established in Helsinki, Finland as a privately funded accelerator focusing on transformative learning solutions in the education sector. The location supports the strategic focus of the accelerator, which is to attract promising startups globally to be accelerated within the Finnish ecosystem and leverage on the Finnish pedagogical reputation. Thus,



the idea was from the very beginning to accelerate Finnish startups to meet the needs of international markets but also host startups from different parts of the world and support them in their process to become international and global. The accelerator focuses only on the education sector, especially on solutions, which are scalable. The edtech sector has a linkage to the social impact and it is being characterized as a 'slow industry'. From the beginning it was clear the accelerator aimed at being an ecosystem builder and removing obstacles that were hindering the public-private collaboration in the education sector.

*"The ecosystem is much more important than building a program and it is the ecosystem that has impact on a startup but also vice versa to other parties."*

- Accelerator manager -

A group of private investors and corporate sponsors enabled the start of the accelerator. At the beginning the accelerator had only two people running it; the CEO responsible for partnerships and the program director responsible for cohorts, programs and ecosystem development. Both of them had personally seen the difficulties for edtech startups during their earlier careers. The accelerator found premises in an old building next to the university of Helsinki and the faculty of educational sciences. The closeness to the pedagogical research and teacher education was an appropriate place for an edtech accelerator.

#### **4.2 Growing community**

The first cohort started in spring 2016. The first cohort was a pilot program and implemented through trial and error. It took some rounds until the program reached the level where it was more or less replicated the way it was conducted for a previous cohort. The quality of the startups and competitive process in the selection (European accelerator summit, 2016) are critical for any accelerator. Parallel to the growing awareness and recognition in the Finnish market, the accelerator had from the beginning interested applicants from abroad as well as locally. The selection criteria covered usual questions like: how convincing is the startup team? In addition, one of the key selection criteria included the ability to convey the pedagogical impact of the product.

At the beginning the CEO and the program manager did a great deal of personal marketing to attract interesting and potential startups to apply for the cohorts. The word-of-mouth effect spread relatively fast and startups collaborating with corporate partners or other significant corporate stakeholders started to hear recommendations for the accelerator. In addition to the business relationships, the personal contacts of the startups like other entrepreneurs and even friends were also a channel of information. The events and contacts to the export promotion programs provided also a gate to the accelerator.

The modules of the program in the edtech accelerator consist of usual accelerator training modules, for example, business development and communication (Pauwels et al., 2016) apart from the co-creation and pedagogy, which is a sector driven specialty of the edtech accelerator. The pedagogy part is related to the specific industry sector and the Finnish environment. The heavy emphasis on pedagogy is unique in international comparisons and it stems from the strengths of the Finnish teaching environment.

The accelerator also soon realized they have to take an active role in building up a community of alumni. The alumni network is maintained through publishing newsletters, sharing success stories, communicating in the social media, organizing events, and inviting alumni startups to the accelerator whenever there is an event or gathering that could be useful. In addition, there are social events like barbeque parties and Christmas parties.

*“Well, we have enjoyed their networks the whole last year and this year as well. As alumni we get invitations to everything. This is a strong ecosystem... now we notice concretely that this has developed to a fine ecosystem. We have international visibility and through them new opportunities. You just need to be actively involved yourself.”*

- Startup entrepreneur -

The role of a specialized accelerator is to enable insightful and useful encounters. Having an in-house office links a startup closer to the alumni network and serendipitous encounters with peers in comparison to the startups that are located elsewhere. However, it seems that even though the startups create close connections to each other during the program and would be willing to be an active member of the community, many startups do not have time in the long run to be as involved in the accelerator networks as they would like to be.

In addition to the ‘power of peer support’ an essential part of the growing community are the accelerator networks: corporate partners, investors and mentors. In addition, in the edtech accelerator it included the public sector partners enabling co-creation and testing the solutions and also international partnerships. The sector specificity and the strong emphasis on pedagogics shows in the profiles of the mentors that represent business and technology but also the field of education.

### **4.3 Ecosystem development**

The findings of this study clearly indicate that all the involved parties stress the role of an accelerator as an ecosystem builder. The viewpoints from startup entrepreneurs stress that it is important to be active and interestingly the serendipitous encounters are highlighted. Fostering serendipitous encounters for nascent entrepreneurs through support mechanisms has caught recent research attention as well (Busch & Barkema, 2020).

*“a good accelerator ecosystem is actually most of all enabling right kind of serendipitous encounters”*

- Startup entrepreneur -

In addition to the usual accelerator networks, the management of the accelerator soon realized they needed to build up networks, which would enable co-creation at the public-private interface with educational institutions. From the schools’ point of view the co-creation and testing enhance the digital transformation at schools while teachers and students are having access to the latest innovations. From the municipality’s point of view, the accelerator took the initiative and speeded up the process of creating a systematic approach to the collaboration between schools and startups and once completed, the systematic approach benefits the whole entrepreneurial ecosystem of Finnish edtech companies, not only the accelerator startups. Collaboration has not been

emphasized in accelerator studies; however, the literature on business associations highlights collaboration (Wang & Tan, 2019).

The edtech accelerator also recognized the importance of events and decided to put effort in an education focused startup event gathering together investors, startups, educators and other influencers in the field. The event was organized as a side event to the major startup event in Finland, the Slush. The first XcitED event was organized 2017 and followed by continuation in 2018 and 2019. In addition, there are several smaller events. The growing Finnish edtech ecosystem shows in edtech related events by other organizers, e.g. Dare to Learn, introduced likewise in 2017 and targeted for international and domestic audiences.

The first success stories of startups in 2017 validated the position of the accelerator. Yet, despite positive developments in terms of entering new markets and closing rounds of investments, the startups are still at the early stages.

Another characteristic that stems from the specific features of edtech is the importance of stressing the social impact. Many ventures in the edtech accelerator are motivated and driven by the motto 'working for a greater cause' and genuinely willing to change the world through education even though at the same time having the goal of creating profitable business. Through the accelerator, startups learn to crystallize their profile as a social impact company and articulate their social impact for investors using metrics of impact, and are also advised to focus on investors who would understand and appreciate that edtech is a slow industry. An important milestone in terms of investments was when an education focused impact fund was established.

Furthermore, the growing ecosystem shows in the emergence of startups that offer services for edtech startups like a company doing pedagogical evaluations or a startup gathering together educational solutions to provide larger entities of Finnish education for export markets. The development of the ecosystem level shows also in initiatives like the edtech association or the start of the master's degree education for educational entrepreneurship.

#### **4.4 Edtech accelerator as an ecosystem builder**

This section draws together the findings from the previous sections and positions them in the framework presented in section 2 and approaching accelerators both through the cohort-based programs they provide and through their role as an ecosystem builder

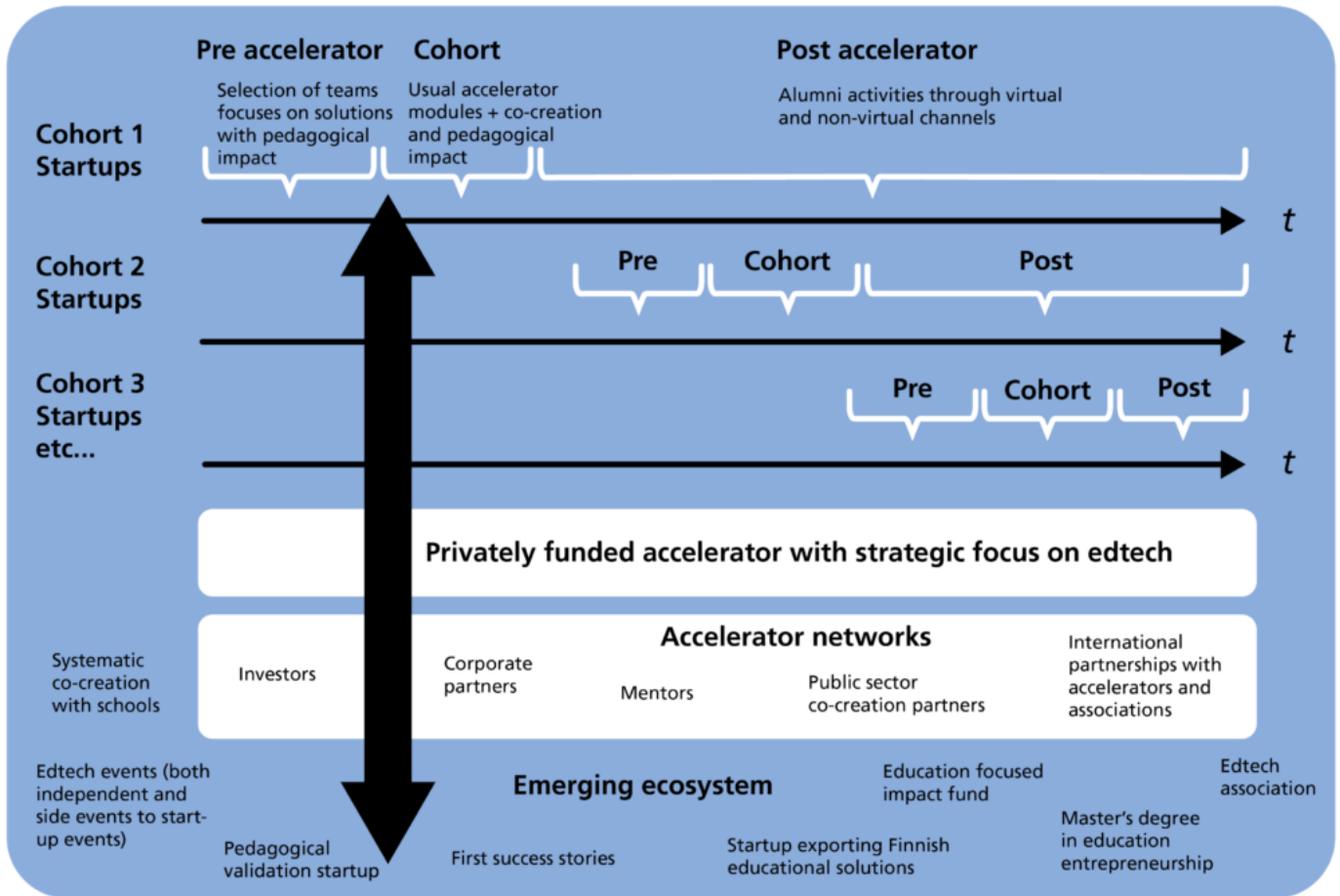


Figure 3: Edtech accelerator as an ecosystem builder

The interviewees of this study, who represent different roles – accelerator management, accelerated and non-accelerated startups from the field, mentors, investors, public sector partners, partners for internationalization and corporate partners – all of these groups seem to perceive the strength of the accelerator is the focus on education sector. Being at the heart of edtech ecosystem has advantages for all involved parties as opposed to general support mechanisms. The various key groups in the ecosystem also share the viewpoint that the edtech accelerator has had a significant impact on the emergence and development of the ecosystem.

Yet, the viewpoints of the impact of an edtech ecosystem still vary and the role of the accelerator is considered both positively and more critically. The critics are especially targeted to investment opportunities, which were the priorities for the startups when they applied for an accelerator. Yet, the growing community, networks and ecosystem were valued, especially considering the accelerator had built it more or less from the scratch.

### 5 Discussion and Conclusions

Accelerators are positioned and defined in the entrepreneurial ecosystems both through the programs they offer and through their role as ecosystem builders. This paper had the latter approach by explaining through in-depth data how an emerging edtech accelerator is an ecosystem builder. Therefore, the main

contribution is to join the discussion of emerging ecosystems through the role of an accelerator and especially through the question 'how do ecosystems emerge and develop'? The longitudinal data supported the intention to shed light on the process question.

A further contribution is related to the context studies in entrepreneurship supported by recent calls for contextualizing entrepreneurship studies (Welter & Gartner, 2016). The first accelerators were founded in the United States and therefore, the research on accelerators has been heavily dominated by research focusing on the US models. Temporal, spatial, social and institutional contexts matter and like one of the interviewees expressed it in a form of a following metaphor "if you wish to navigate through the sea area of Helsinki, it does not help to have a nautical chart of San Francisco bay".

The context is multifaceted and therefore, contextualized studies on accelerators would deserve further empirical examination. The entrepreneurship literature calls for views that bring diversity to the dominant Silicon Valley approach of growth entrepreneurship (Lehmann et al., 2019; Pahnke & Welter, 2019; Welter, et al., 2019).

In accelerator studies - as in any entrepreneurship studies - re-thinking the whole concept of context (Welter et al., 2016) is worth further attention. It is also important to integrate context-sensitivity to all stages of research including the research design, data collection, analysis and finally interpretation and publication of the results (Chlosta, 2016). Finally, practice-based bottom-up approaches to understand the diversity of entrepreneurial ecosystems offers likewise several research opportunities for future studies.

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