UTILIZATION OF ACCELERATOR FACILITIES IN MOBILE APP DEVELOPER STARTUPS

Research paper

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Abstract

This interpretive grounded theory study describes and analyses how early-stage mobile app developer startups utilize an accelerator's facilities to develop and publish their game applications on a platform. The data was collected by interviewing 20 startups participating in an accelerator operated by a mobile platform-owner. Our model shows that the accelerator is affecting our early-stage startups in five areas of: their 1) market-related activities, 2) resources, 3) startup's capabilities, 4) experimenting activities, and 5) game design activities. We discuss how the startups utilize the accelerator's facilities to improve their capabilities and knowledge inside their firms which can affect their game design, access to resources, and improve their market-related activities. Furthermore, they make the accelerator into a social boundary resource through which they aim 1) to collaborate with and impact the platform decisions more effectively, and 2) to gain access to resources from other members of the ecosystem, in order to increase the chance of acquiring more users and building a reputation for entering other platforms. Our study enriches the existing literature in the areas of mobile application development and accelerators by shedding light on the game development activities of early-stage startups that have been selected to a platform-owned accelerator.

Keywords: Mobile App Development, Boundary Resource, Accelerators, Grounded Theory study.

1   Introduction

The total revenue generated from mobile application (app) development has been increasing since the introduction of mobile app platforms, and it is expected to reach 63 billion euros in 2018 and to employ 5 million people only within EU (Mulligan and Card, 2014). While the opportunities for entrepreneurship in mobile app development area are well acknowledged, the complexity of the market for new third-party app developers due to the high competition and their lack of power against the platform owners has been widely criticized. The developers have to deal with issues related to diversity (e.g. multiple platforms, markets, customers), knowledge (e.g. business knowledge, platform strategies) and structure (e.g. high control of platform owners, high competition in the market, unreliable income) of the business environment (Bergvall-Kåreborn and Howcroft, 2014). They are compelled to operate within the limitations of the market-making platform structures (Qiu, Gopal and Hann, 2017) which, in fact, favour the established firms with more resources over the startups (Bresnahan, Davis and Yin, 2014). Particularly, in the category of games comprising the largest category of apps on all mobile platforms, the competition is extremely intense (Yin, Davis and Muzyrya, 2014) even for established firms. Rovio (creator of the Angry Birds game) lost as much as 50 percent of its share value

in early 2018 after not being able to meet its expected profit because of competition (Ram, 2018). In this setting, young game developer firms have to deal with the complexities of market competition, combined with the liability of newness (Schwartz and Hornych, 2012) and lack of resources. All these make sustaining their businesses a serious challenge.

Business accelerators have a key role in business ecosystems in expediting the adaptation of startups to competitive markets (Cohen, 2013). Introduced in 2005 in the US, the concept of accelerators has quickly spread all around the world. These accelerators operate either within a specific industry or are generalists (Fehder and Hochberg, 2015); can be independent or owned by different firms; and can have different goals including building an ecosystem for a company, matching startups with investors, or profiting from investments in startups (Pauwels, Clarysse, Wright and Van Hove, 2016). Typically, they recruit a cohort of startups and over a short period of time, provide them with intensive training, knowledge building packages, mentoring, and networking opportunities in order to facilitate and accelerate their growth (Cohen and Hochberg, 2014).

Despite the increase in the number accelerators and in the importance of their role in assisting startups, empirical research on the impact of accelerators on startups is still scarce. Some positive effects, including better reach for capital, customers, experience and networks, and increased credibility have been noted (e.g. Hoffman and Radojevich-Kelley, 2012; Kohler, 2016). Some studies report mixed findings without distinguishing between the views of the participants and the accelerator. Most extant studies are based on macro-level analyses, without in-depth insight into how the accelerator's facilities and resources are utilized by the startups to support their activities and to strengthen their position in the competitive market.

In this paper, we present findings from an empirical study seeking answer to the research question of *'how do the early-stage third-party app developer startups utilize the accelerator facilities in developing and publishing their apps?'* We conducted semi-structured in-depth interviews with 20 startups participating in a program of an accelerator and applied the classic grounded theory method (GTM) (Glaser, 1992; 1998; 2007), both as the method of data analysis and as the technique for theorizing. Our model illustrates how early-stage mobile game developer startups utilize the facilities provided by a platform-owned accelerator, and contributes to the literature on the role of accelerators and third-party development on the platforms, and shows how a platform owner can affect the developers' activities.

The remainder of the paper is organised as follows. In the next section, we present a summary of earlier literature relevant to this study, followed by an outline of the research setting and research method in the third section. The findings of our analysis are presented in the fourth section, and the implications of our findings in relation to the literature are discussed in the fifth section. In the final section, we conclude with a summary of our contributions and outline avenues for future research.

2 Literature Review

With the aim to understand how the mobile app developers utilize the accelerator's facilities, our literature review focuses on earlier studies on mobile application development and accelerators. Following GTM, this literature is considered to be a 'preliminary literature review' (e.g. Urquhart and Fernández, 2013), which means that the literature has not been imposed on the data analysis but has been composed afterwards. Once concepts from the data are known, emergent concepts, model or theory need to be linked with the new literature (e.g. Urquhart, Lehmann and Myers, 2010). Thus, the extended literature will be elaborated in the chapter where the model and discussion are presented.

2.1 Mobile application development

Smart phone industry is an ecosystem type of business where networks by variety of firms from different segments complement each other to create value for customers (Basole, 2009). The ecosystems in this industry develop around the mobile digital platforms (i.e. a type of software-based platforms) (Tiwana, Konsynski and Bush, 2010). They are configured with a generative socio-technical mecha-

nism (Henfridsson and Bygstad, 2013) allowing addition of applications by the third-party developers, and constant evolution of the platform (Yoo, 2013). Both same-side and cross-side network externalities (Rochet and Tirole, 2003) are strong among and between the app developers and consumers, hence increasing the value of a platform (Bharadwaj, El Sawy, Pavlou and Venkatraman, 2013) against its competitors and resulting in revenue for the platform owner, the developers, and other eco-system members (e.g. advertisement dealers, payment systems, etc.) (Garg and Telang, 2013).

Mobile ecosystems provide opportunities and challenges both for the platform owners and the third-party developers. The platform owners can exploit and capitalise on the "crowd-sourced" form of in-novation on their platforms through access to a large body of startups and their arm's length contracted labour (Bergvall-Kåreborn and Howcroft, 2013b). The developers should be allowed to fully exploit the platform and create applications, while the platform needs to be protected from becoming frag-mented by too much change (Yoo, Boland, Lyytinen and Majchrzak, 2012). As such, the relationship between the platform owner and the app developers is enacted through boundary resources by *resourc-ing* and *securing*. Boundary resources are defined as "the software tools and regulations that serve as the interface for the arm's-length relationship between the platform owner and the application devel-oper" (Ghazawneh and Henfridsson, 2013: 177), while resourcing refers to the process to extend the scope and diversity of the platform, and securing is the process of increasing the control to protect the sovereignty of the platform by regulations.

The developers also face opportunities and challenges. They have various intrinsic and economic mo-tivations (Ghazawneh and Mansour, 2015) to join any platform. These motivations range from im-proving their technological skills to gaining economic benefits by various means (Bergvall-Kåreborn and Howcroft, 2011), such as gaining access to development tools, a large-scale distribution channel, ease of payment handling by the platform owner, positive user reviews that can increase the chance of download, and the reputation that the developers gain by distributing their apps on the authorized plat-forms (Ghazawneh and Mansour, 2015). However, they also face challenges generated by diversity (e.g. need to deal with multiple platforms, markets, customers, etc.), lack of knowledge (related to e.g. business knowledge, platform strategies, etc.), and market structure (e.g. high control of platform owners, high competition in the market, unreliable income) (Bergvall-Kåreborn and Howcroft, 2014).

A critical challenge for developers relates to the market structure and the nature of competition. The mobile app market is crowded and highly competitive, resulting in challenges in revenue generation and possibly necessitating excessive working hours. Revenue generation might also get delayed if the developer needs to offer their apps for free to gain recognition in the market (Bergvall-Kåreborn and Howcroft, 2013a). There might also be a conflict between the professional interests as software devel-opers and the business interests in selling the apps on the market (Qiu et al., 2017). Furthermore, the structure of the app markets with ranking lists and the importance of getting listed on those lists to gain visibility, favour the more established firms with more resources (Bresnahan et al., 2015). Partic-ularly for games, the largest category of apps on all major platforms, the competition is intense due to extremely populated market and heterogeneous users' demands (Yin et al., 2014).

Many if not most of the game development firms are independent startups (Qiu et al., 2017). While there is no clear consensus on the definition of a startup, the commonly agreed characteristics of a startup include having limited resources in terms of knowledge, finance and network, and struggling to promptly react and adapt to market changes, and finally scale up (Paternoster et al., 2014). Startups are faced with a wide range of challenges in terms of defining the product, market, and business strategy to make a profit, and team work and operating inside the firm (Giardino, Bajwa, Wang and Abrahamsson, 2015). Mobile app developer startups also face some specific challenges due to the structure of the market and their limited power compared to the platform owners. Under these condi-tions, participation in programs that offer support facilities to startups can be highly beneficial.

2.2   Overview of accelerators

Since the first business incubators in late 1950s, their fundamental idea has been to assist new ventures in their creation and growth. The forms of assistance has ranged from simply offering cheap office

services (Hackett and Dilts, 2004) to the more complex intangible and knowledge-based services, including seed capital, mentoring and education, networking opportunities (Bergek and Norrman, 2008) and help with their sustainability (Cohen, 2013). Accelerators are a new generation of business incubators that were introduced in mid-2000s, following the rise of low-investment technology firms after the dot-com bubble (Pauwels et al., 2016). The accelerators mainly focus on supporting new internet and mobile startups (Miller and Bound, 2011) to accelerate their growth.

A widely accepted definition of an accelerator is presented by (Cohen and Hochberg, 2014: 4) as *"a fixed-term, cohort-based program, including mentorship and educational components, that culminates in a public pitch event or demo-day"*. During the fixed term, accelerators provide free intense education through mentoring. In an empirical study of 13 different accelerators, Pauwels et al. (2016) defined the components of an accelerator design in five blocks of 1) program package 2) strategic focus 3) selection process 4) funding structure, and 5) alumni relationships. They categorized accelerators according to their aims into 1) *ecosystem builders* (affiliated with a corporate to match the customers with the startups and build a corporate ecosystem); 2) *deal-flow makers* (introducing the startups to investors and finding investment opportunities; and 3) *welfare stimulators* (stimulating the startup activity and help with its economic development) (Pauwels et al., 2016).

The term 'corporate accelerator' refers to an accelerator where a corporate has invested in to provide a limited-time support program for startups with a product in a certain field of interest to the corporate (without equity investment in them) (Weiblen and Chesbrough, 2015). The accelerator can be run by or on-behalf of a corporation (Pauwels et al., 2016). Corporate accelerators can provide numerous benefits to the startups in terms of access to resources, markets, funding, and credibility in acquiring funding from investors (Kohler, 2016). In return, the accelerators can benefit from the innovations that are created by the startups to respond faster to market changes (Weiblen and Chesbrough, 2015) or to create an ecosystem around the company (Pauwels et al., 2016).

The type and extent of impacts accelerators can have on the startups is not yet fully understood, both because of the newness of the apps industry as well as accelerators, and the lack of comprehensive data sources (Cohen and Hochberg, 2014). A few earlier studies have found some evidence of effects of accelerator participation on the startups, even though the results are not always empirically well-grounded and in many cases it is not clear whether the research findings are based on the participating startups' or the accelerator's points of view. Some studies have, however, shown that accelerators make better and more disciplined entrepreneurs (Miller and Bound, 2011) and that they can provide more learning opportunities for the startups (Dempwolf, Auer and D'Ippolito, 2014). A key impact measure used in many studies has been the increased chance of access to investors for future capital (e.g. Fehder and Hochberg, 2015; Hallen, Bingham and Cohen, 2016). While future capital is inarguably essential for any startup, they also need to learn how to overcome the liability of newness, how to scale up rapidly, and how to maintain a sustainable business (Xiaofeng et al., 2016; Giardino et al., 2014).

3   Research Setting and Methods

This study focuses on AppCampus, an ecosystem-builder type (Pauwels et al., 2016) seed-accelerator program in operation between May 2012 and May 2015 for funding and training Windows Phone app developers. It was a partnership between Microsoft (and formerly Nokia) and Aalto University in Finland, and it funded about 300 apps throughout its operation. The funding was offered in exchange for 90 days exclusivity of the fund receiver app on Windows Store. Some fund receiver startups with most promising apps were invited to participate in a two-week acceleration camp (called AppCademy) where they participated both in general and in one-on-one training, and met people from Microsoft and other service companies, such as publishers and advertisement supporting companies. Each of altogether eight AppCademy camps organized during the span of three years hosted about 20 teams and ended with an "Open-House day" where the startups presented their apps to industry representatives and anyone else interested. After the camp, AppCampus provided continuous monitoring of its published apps and offered support by various mechanisms, including introduction of the app on Ap-

pCampus website, social media, press release, public events, and through the contracts it had with advertising companies for promotion of apps. It also supported the developers by forming an alumni group on Facebook. Furthermore, it operated an online academy where it published the AppCademy training videos.

The process of selection of the startups was conducted through open-application and local partners around the world, who would find and filter the right candidates with apps that had potential appeal to mass market, and encouraged them to apply. Upon being selected, the startups would go through the processes of *vetting* (administration requirements), *design* (project definition and receiving 30 percent of the funds upon approval), *release* and start of 90 days exclusivity period (publishing the app and receiving the 70% remaining fund), and *a post-mortem* (getting support for promotion of the app).

This study is comprised of interview data of 20 international game developer startups (named alphabetically in this paper) from 13 countries, that participated in three of the AppCademy camps in 2014 and 2015. We conducted 28 interviews. Analysing our data, our findings reached saturation after going through 20 interviews, where we started to see "similar instances over and over again" (Glaser and Strauss, 1967: 61). The interviewees were mostly the founders of the startups, except for two firms in which the project leader and designer, and the business developer were interviewed. In these two cases, the interviewees had been in the firm since its early days and were informative about the firm's operations. The interviewees were considered as the representatives of their startups (Churchill and Lewis, 1983), as in the early stages of a firm, the owner and the business are highly linked and the founder significantly invest himself/herself into the business (Cope, 2003).

The semi-structured interviews were conducted by the first author of the paper who also observed most of group training sessions of the three AppCademy camps, and interacted with the participants and staff team to get a more in-depth insight into the activities during the camp. The interviews lasted between 30 to 60 minutes, and all were recorded and transcribed. After each interview, notes were made to describe the initial understanding of each story. The themes of the semi-structured interviews related to the background information about the startup (its personnel, experiences, and roles), and business model elements about their current and if any, previous applications (description, target audience, revenue model, success definition), and their interaction with AppCampus (how they had found it, experiences, learning).

We used Grounded Theory Method (GTM) as both the method of data analysis and the technique for theorizing. We followed the Classic GTM with three coding phases (open, selective and theoretical) (Glaser, 1992; 1998; 2007). GTM was highly useful, as there is still lack of research on the role of accelerators through their incubation (acceleration) process (e.g. see Mian, Lamine and Fayolle, 2016), and third-party development on the platforms (e.g. see Ghazawneh and Henfridsson, 2013) and how platform owner can affect the developers' activities (e.g. see Qiu et al., 2017). We followed the recommendations of Glaser (e.g. 1992) for the researcher to take an open approach in order to confirm that concepts genuinely arise from the data. Glaser (1992, 1998) also recommends the collection of rich data, for example in the form of interviews. Over 500 initial open codes were identified and subsequently - through many iterations and merging and grouping - reduced to 367 codes. Eventually, the codes were grouped into 10 selective codes. During selective coding and through several iterative processes, emergent core categories were discovered. Then, the relationship between selective codes were deliberated as a part of theoretical coding phase. Analytical memos (e.g. Glaser, 1992) were used to assist this process. The core category of 'utilizing the accelerator's facilities' elaborated in this paper is comprised of 6 selective codes and their relationships. Table 1 summarises these open and selective codes with a brief description of each selective code.

4   Findings

This section presents the findings of our core category "Utilizing the accelerator's facilities". The emergent category demonstrates the importance of the following six selective codes: 1) Startup's capabilities, 2) Market-related activities, 3) Experimenting activities, 4) Resources, 5) Game design ac-

tivities, and 6) Accelerator's facilities. The constructs of 'utilizing the accelerator's facilities' category is illustrated in Table 1.

Open Codes	Selective Codes	Definition
Lacking business knowledge; lacking financial resources; experience with game development; roles in company; building the team; changing from hobby project to commercial game development; part-timing; reflecting own philosophy	Startup's capabilities	The state of the startups in regards to their challenges and their capabilities
Monetizing; localizing strategy; using low-cost marketing campaigns; launching; believing in featuring for getting downloads; focusing on downloads; changing revenue model; expanding the market step-by-step; building reputation	Market-related activities	Market activities upon publishing the app and after
Soft-launching; experimenting with AppCampus game; experimenting with previous game	Experimenting activities	Learning-by-doing activities to cope with lack of knowledge
Exploiting team members capabilities; outsourcing; benefiting from local attributes; exploiting community; using professional network as a resource; using family and friend resources; using interns; doing contract work; dedicating full-time to company	Resources	Use of available resources to perform game development and publishing activities
Differentiating the game, integrating social aspects in the game; developing in Unity; avoiding complex game design; caring to get more rating and positive reviews; applying IAP strategies; beta-testing; designing short game plays; making better game due to AppCampus; paying attention to game quality	Game design activities	Activities related to the issues considered in game design
Learning by AppCampus training; benefiting from networking in AppCademy; building relationship with the platform owner; benefiting from funding; getting invited by platform owner; benchmarking through AppCampus; building reputation by AppCampus	Accelerator's facilities	What the developers benefitted from the accelerator

Table 1.   Construction of 'Utilizing the Accelerator's Facilities' category through open and selective codes.

While Table 1 lists all the open codes that shaped our understanding of the core category. In this paper we focus on the codes that best help in understanding the relationships between the selective codes in our model.

4.1   Startup's capabilities

The two fundamental open codes in selective code 'Startup's capabilities' are 1) lacking business knowledge, 2) lacking financial resources.

'Lacking business knowledge' describes the fact that the startups in our sample were founded by technology-oriented people with related education or work-experience, and their lack of knowledge about the business-side of app development. The startups were not experienced in commercial game development, were all less than four years old, and considered the current game as their first commercial game. They had typically moved from hobby development into commercial development due to various reasons, such as: discovering their capability for game development; getting motivated by high number of downloads on the market without expecting it; being curious about the evolving app market and possibility for innovation; and/or recognising a business opportunity in the mobile app market. Accordingly, the core of the firms was typically created between people who knew each other being colleagues, friends, study peers, or family members.

> *"I attended this summer course where we tried to make a mobile game in three months. That was after we* made *a funny [...] game in a game jam. After that, it seemed that we could really do it, if we could—if I found the right people" (Startup P)*

The main tasks in the startups included programming, marketing and business-related issues and running the company. Yet, the lack of knowledge about business was reflected in the weakness in marketing strategies, monetizing, or the challenges faced in running the company. Some preferred to use a publisher to launch their games in specific geographical markets or on platforms which they did not have enough knowledge about.

"Actually, that's one of our problems, because there is not much incentive [for users] to purchase [the features inside the game], because you can get almost everything for free" (Startup N)

'Lacking financial resources' highlights the fact that the startups had scarce financial resources which prevented them from hiring the most experienced talents to take care of the business-side or complement the technological expertise. To cope with the financial challenges, startups used multi-tasking and the sweat-equity (Herber et al., 2017) even if it required spending more energy and time. Many of them were working on other, outside contract jobs, as well. They tried to acquire external low-cost services, particularly for art, music, and translation of their games, by using interns and their community of family, friends or previous users.

"I was the only one who was ever employed full-time with the AppCampus money just because I can do art and code and design all at once, so we didn't need too many other people." (Startup C)

4.2   Market-related activities

The four main open codes for 'Market-related activities' are 1) using low cost marketing, 2) focusing on downloads, 3) building a reputation, and 4) believing in featuring for getting downloads.

'Using low cost marketing' describes how the startups used zero-cost or low-cost tools and channels to promote their games in the market to gain visibility. These channels and tools included using social media, preparing press releases for review blogs and websites, participating in possible outlets, exhibitions and gatherings, and using their contacts or previous users to spread the word.

"Then we actually sent it to all local, small Windows Phone sites that are in the local language. At that point, we just used Google Translate to translate-- [laughter] we made a press release with simple language; [...] used Google Translate, then sent it to the locals" (Startup N)

'Focusing on downloads' describes how the startups prioritised the number of downloads over revenue in the early stages. Focusing on downloads was in line with the aim of **'building a reputation'** and to be able to compete with popular games or game studios.

"I like the downloads, largely in part because it builds my brand. And so it's kind of like, if you can get the numbers, you can make the money later. Or at least you have the potential to make the money later." (Startup K)

'Believing in featuring for getting downloads' describes how the startups considered the market mechanism of getting featured to gain visibility in order to increase their download volume.

"A few days ago when we were featured in Brazil [...] We got at least 600 downloads more than we usually got" (Startup B)

4.3   Experimentation activities

This selective code of 'Experimenting activities' includes two main open codes: 1) experimenting with previous game, 2) experimenting with AppCampus game

'Experimenting with previous game' describes how the startups tended to experiment when they were uncertain about either technical-side or the business-side of game development in their previous efforts that were related to learning about a platform, a particular mobile device, or the development process. Further, they could learn about the business-side related to users' behaviour, and monetization models such as: advertisement, offering the app for paid or for free, and using in-app-purchase according to the test platform.

"I got training, got a phone, and started playing with it, and so when I started it, it was not the idea, 'Well, Okay, I'm going to start a game business.' It was just releasing a game and seeing how well it goes." (Startup D)

'Experimenting with AppCampus game' describes how the startups were trying to use the AppCampus funded-game as a learning experience to experiment with different aspects of game development, such as publishing, monetizing, or new innovation.

"Yes. Yes, I've been making my money in Android from ads so it definitely was in the back of my mind. Basically the AppCampus was I wanted to test to raise the quality of the app by having no ad in it and see if it would help with the conversation." (Startup F)

4.4 Resources

This selective code of 'Resources' contains five essential open codes: 1) exploiting team members capabilities, 2) outsourcing, 3) exploiting community, 4) using family and friends' resources, 5) using professional networks as resources.

'Exploiting team members capabilities' describes how the startups tried to utilize their team members' competences in order to cut the costs. In fact, they were capitalizing on their sweat-equity as much as possible.

"We are covering [the translation in] Italian, Spanish and English in our company, because we have local native speaking people of these 3 languages, so half of the translations is going to be done by them." (Startup Q)

'Outsourcing', **'exploiting community'**, **'using family and friends' resources'**, and **'using professional networks as resources'** together describe the ways that these startups tried to gain access to low-cost resources. The external low-cost services for hiring freelancers for a specific task such as design, art, and translation services were mostly found through internet or networks, or by using interns in their firms. The community of users of previous games were used to help in translation, beta-testing the game in development, and acquiring early adopters. Further, the developers' networks consisting of previous co-workers, friends and/or other peer-developers were used for getting information about opportunities in terms of funding, finding an expert in an area, and feedback about the apps.

"We try to reach out to students and non-union actors who would be more flexible and to put it bluntly we wouldn't have to pay them as much" (Startup C)

"I borrowed some Euros from my dad to put towards the company." (Startup P)

"We're going to sort of contact the standard bloggers and stuff, and we're going to hit up the contacts we have here from Nokia; also our old previous Nokia and Microsoft contacts." (Startup A)

4.5 Game design activities

The selective code 'game design activities' consists of five fundamental open codes: 1) integrating social aspect in the game, 2) Applying IAP (in-app-purchase) strategies, 3) designing short game plays, 4) avoiding complex game design, 5) making better game due to AppCampus.

'Integrating social aspects in the game' describes how the startups considered the issues related to attracting users to the game and improving user retention. The social aspect was implemented through embedding connection to social media such as Facebook page, and/or other mechanisms to make the users motivated to play; for example by a multi-player game.

"We're working on a friend system, so we'll have in-game chat, so you can talk to people, so you can actually meet people and add them as friends. So you can see when they were last online; you can see if they're playing a game, and you can check the game info and see if you want to join that game as well; send messages to people [...] so people can ask each other questions and help each other out [...] and Facebook integration, so you can check, like, 'Who of my friends on Facebook are playing this game?' as well 'Do I want to invite them or not?'" (Startup I)

'Applying IAP strategies' describes how the startups tried to follow the freemium model of monetizing in the market by offering the game for free to gain high volume of downloads, yet incentivising the users to pay for additional features, to boost their performance, or to purchase customization elements.

> *"One thing would be selling the levels, that you can unlock levels with money, but then you can speed up the progress [...] So you have to earn amount of points to progress, to get to the next level and then you can somehow speed up the coin [...] Or one thing could be that you can play as long as you want, but when you die you go back in the beginning and you can unlock with the money the premium version that it saves the progress, so you can continue where you left again." (Startup B)*

'Designing short game plays' and **'avoiding complex game design'** jointly describe the ways through which the startups tried to fulfil the expectations of the users in the mobile context in terms of players' short engagement in the game and allowing the user to stop or pause the game play whenever they wish, as well as making it easy for the users to get engaged in the game.

> *"Any given bit of gameplay's really short, so if you've got a little bit of time to kill it's in this nice unit where you're like, 'Okay, well, I can go get some stuff.'"* (Startup A)

> *"So first you get your control – like [...] when an enemy appears: you have to aim, you have to shoot at him. And, like, introduce one element at a time for all the game elements."* (Startup I)

'Making better game due to AppCampus' describes how the startups could improve their games through the one-on-one training, the quality assurance review and the funding to make the game more sophisticated. However, this also created some conflicts for the developers.

> *"QA was extremely useful in AppCampus, I mean like they pointed out things that I have not noticed or thought it's not important, but actually it was important. [...] Like this font is too small, [...] like it would be more useful if you remove this. . . small QA things but when you do all of these things, it becomes much better. I could feel the quality increased." (Startup U)*

> *"On Windows Phone, you shouldn't have a back button, because every phone has a hardware back button, so they didn't want it. We would have wanted it because it's better for users, but they actually forced us to remove it, so we had no choice. But it looks okay. It was no big deal." (Startup N)*

4.6   Accelerator's facilities

This selective code of 'Accelerator's facilities' includes five fundamental open codes: 1) getting invited by platform owner, 2) benefiting from funding, 3) learning by AppCampus training, 4) benefiting from networking in AppCademy, 5) building a reputation by AppCampus.

'Getting invited by platform owner' explains how the startups were discovered by the platform owners, based on their potential for success by having some download statistics showing their ability or winning competitions, or through local events by AppCampus partners where they could pitch their ideas.

> *"I got the Microsoft guy, person contact me because of my other game that I did. Yes, it was downloaded, people liked it, it had a nice amount of downloads, but I didn't monetize it very well. Now it's, this game I make right now, I improve the monetization" (Startup H)*

'Benefiting from funding' describes how the funding by AppCampus was an important motivator for the developers to develop their games for the Windows platform and to accept the three months exclusivity period. In fact, they turned the exclusivity period into an opportunity to polish their game before offering it to other more crowded platforms. The funding and time schedule allowed the startups to make their games more advanced in terms of design, or implementation of new ideas, such as adopting a new revenue model or introducing a new gaming concept to the market. Additionally, they were allowed to invest more time into their game development activities and be more disciplined in meeting the deadlines.

> *"We can develop [the game] all our time from now, because we didn't bother about go[ing] to other work a lot, for example, to earn money from different places. I think it speed up the process." (Startup W)*

However, some conflicts arose because of the timing of the funding, and for some developers it was not easy to cope financially when the funding was offered after meeting the milestone objective rather than in advance.

> *"The thing is that we didn't have money [...] they give you 30 per cent after [...] Until you get to this 30 per cent you have to do everything on your own" (Startup J)*

'Learning by AppCampus training' describes the startups' reflections on the training in AppCampus. The training helped them to improve their understanding of the business side of game development. They learned how to manage their marketing strategies with limited resources, how to prioritize their goals, and how to improve their game design for better user retention.

> *"[In] the one-on-one coaching, with the coaches, they gave us amazing ideas to improve the game with monetization. Like, we feel like we MUST improve, we MUST improve." (Startup H)*

However, some conflict of interests emerged between the startups and AppCampus. Some of them related to the change of strategies of AppCampus during development period (such as focusing on some special store features like "Try and Buy" option, and some other related to the desires of the platform or AppCampus. For example, one of the interviewed developer did not like to focus on downloads but was more interested in attracting few dedicated users.

> *"I think it's very heavily focused on downloads. Which I can understand because it's platform holders, they want the downloads [...] That's not necessarily what's best for everybody." (Startup E)*

'Benefiting from networking in AppCademy' describes how the startups reflected on the networking opportunities with peer-developers, the platform owner, and external contacts during the AppCampus program. Informal communications between the teams due to being in a shared space and networking events, created a feeling of community, encouraged sharing experiences, learning from each other and requesting help from one another in terms of receiving feedback, beta-testing, user rating, and localization languages. Continued participation in the peer-network was possible through the online Alumni channels.

> *"We got to meet people from around the world and people like a studio from Finland and it's really cool because you find out about what's going on with games all over the world just in my Facebook news feed because now we're all Facebook friends. I definitely value that aspect of" (Startup C)*

'Building relationship with platform owner' describes how the startups tried to negotiate with the platform in order to receive a featured spot on the market store according to their marketing plans. A critical issue raised by all the interviewees was that they learned how the platform worked. Additionally, the platform offered the startups possibilities for external networking with other parties on the market, such as those providing promotional help for apps, publishers, and companies offering cross promotion and other services in various geographical areas.

> *"Being here you can know from inside how they work, how they decide which App goes to the front of the store. Being here is a huge privilege because I can get the contact person from each country [...] if I say, 'I'm going to - I want to promote my game in this country and I'm going to have my own campaign', also I can talk to the press of the country." (Startup H)*

'Building reputation by AppCampus' describes how the startups reflected on the benefits of AppCampus in terms of building a reputation in the market. That was reflected in perceptions of increased credibility when contacting other service providers, such as bloggers. Also, professional design and download statistics on the Windows app market was seen as a benefit for seeking more funding in the future.

> *"Also one other thing that would be nice is telling about the AppCampus, the AppCademy. Like I'm from Brazil, so if I write a story about how has this AppCademy been to me [...]- they will probably make a notice, make a news. So we'd get more monetization to the game." (Startup H)*

5 Discussion

Our final step was to build relationships between our selective codes of accelerator's facilities, startup's capabilities, market-related activities, experimenting activities, resources, and game design activities (section 5.1). This is known as 'theoretical coding' (e.g. Glaser, 1978; 1998). We will present our theoretical integration in the light of the previous literature in section 5.2.

5.1 Relating the selective codes

We will next discuss the main contribution of this paper, our model (Figure 1), which shows how this final step allowed us to theorize about how 'Utilizing the accelerator's facilities' operated as a core category.
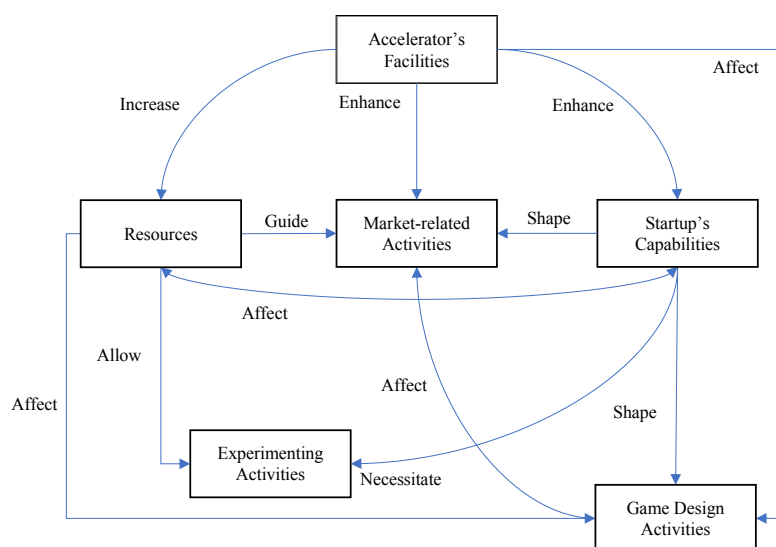

Figure 1.   Utilizing the accelerator's facilities

The accelerator's facilities increase the resource base of the startups through provision of seed funding, vouchers, and contacts. The increased resources affect the game design activities, experimenting activities, market-related activities, and startup's capabilities. With more resources, the startups can invest more on their game design activities, and also improve their game quality through sharing experiences with peer-startups, whom they meet in the program. Furthermore, the increased resources allow the startups to experiment with various scenarios, such as implementing new innovations in terms of market (e.g. a new revenue model) or a game concept and technology (e.g. a new game mechanism). Experimenting is a way for the developer startups to compensate for their lack of knowledge and uncertainties about the market or technology. Moreover, the increased level of resources can assist the startups with their market-related activities. As such, they can invest more time in their market-related activities to promote their games, but also they can exploit the new contacts with application reviewers and publishers made during the program to get more assistance in promoting their games. Additionally, they can use their peer-startups as their early game adopters to boost collecting early user reviews and rates, which would eventually translate into more future downloads. The increased resources can affect the startup's capabilities by allowing a more dedicated approach to their game project, rather than having to engage in outside contract works to cover their costs. In order to receive the AppCampus funding the startups need to meet the deadlines, hence making their game development project more organised.

The accelerator's facilities enhance the startup's capabilities. Through training and mentoring, startups can learn how to monitor their market-related operations, and also set their strategies for future expansions of the business according to their relationship with the platform, for instance in choice of future multi-homing platforms. They learn the importance of using various analytical tools in their games to

monitor the performance and to expand their markets. Enhanced startup's capabilities can increase the quality of the game in terms of better design, and monetization and market-related mechanism (e.g. user rate acquisition). A well-designed game is likely to be downloaded more, to have higher user retention level and to be able generate more revenue. Additionally, through the accelerator's facilities, the startups can shape their market-related activities with the opportunity to negotiate with platform contacts in order to get promotion and featuring for their games in their desired markets and at their desired times. Having been selected by the platform for funding, they can gain credibility and access to the channels for contacting other market players (e.g. reviewers, publishers) which not only shapes their market-related activities, but also helps them to acquire more resources from other ecosystem members (e.g. local fund providers). Throughout the exclusivity period on the platform and the mentorship and support, they can focus on getting a high volume of download and improve their games to build a brand for their future activities. The accelerator's facilities can also directly affect the market-related activities of the startups through enhancing the visibility of their games by featuring them on the store, and by promoting them in exhibitions in different markets. With increased visibility, the platform support can lead to more downloads for the game. Additionally, the accelerator's facilities can also directly affect the design of the game and its compatibility with the platform by requiring the games to get the AppCampus quality assurance approval before being published.

5.2   Theoretical integration – grounding the concepts

Following the GTM guidelines, we performed a theoretical integration, which is the process of comparing concepts generated with previously developed theories (e.g. Glaser, 1992; 1998; Hekkala and Urquhart, 2013; Urquhart, Lehmann and Myers, 2010). Our model (Figure 1) has been engaged with the extended literature in this section in accordance with GTM recommendations for theory building (Glaser, 1992). Following Glaser (ibid.) we considered the integrated literature at the same substantive level as the emergent model or theory. We also show how the emergent theory confirms, contradicts or extends existing theories (Urquhart et al., 2010).

The extant literature testifies that accelerators can help the startups by increasing their resources in terms of finance, knowledge, network, and making them more credible (Cohen and Hochberg, 2014; Hallen et al., 2014; Kim and Wagman, 2014; Miller and Bound, 2011). However, the existing literature has not addressed *how* the increase in resources and credibility actually helps the startups (cf. Bergek and Norrman, 2008) and affects their activities. In addition to confirming the existence of the above-mentioned effects, our model demonstrates how a corporate accelerator can control or impact many of the game development and publishing activities, as well as the quality of the complementary offerings to its ecosystem through its quality assurance tools (Haines, 2014).

Our results imply that the utilization of the accelerator by the startups is not limited to receiving future capital as is defined as a measure of success in most earlier accelerator studies (cf. Barrehag et al., 2012; Hallen et al., 2014). In fact, we find that for early-stage game developer startups a high user acquisition is a success measure, and their activities are directed towards increasing the download volume as the main goal. This is in line with the existing evidence that mobile application developers may postpone immediate revenue making for the future returns by focusing on downloads (Bergvall-Kåreborn and Howcroft, 2013b).

We argue that in our case of a platform-owned accelerator, the accelerator was performing beyond the role of a corporate accelerator in building an ecosystem and merely connecting the end-customers with the startups (cf. Pauwels et al., 2016). Rather, it developed into an artefact connecting and coordinating the relationships between the startups, the platform owner, and other ecosystem members who provide supporting services to developer startups. In fact, by considering the boundary resource model (Ghazawneh and Henfridsson 2013), we argue that the accelerator evolved into a *social boundary resource* for both *resourc*ing and *securing* the platform by controlling and influencing the platform ecosystem (Ghazawneh and Henfridsson, 2010).

In the extant literature, a boundary resource is described to be aimed at transferring the knowledge between the platform owner and the developers, or between the developers (Ghazawneh and

Henfridsson, 2010; Rudmark and Ghazawneh, 2011; Bianco, Myllarniemi, Komssi and Raatikainen, 2014). Nevertheless, our findings show that a boundary resource in the form of an accelerator has, in fact, developed into a social platform *per se*, not only to guide and empower the developers in the direction of supporting the platform objectives (Rudmark and Ghazawneh, 2011), but also to connect and coordinate the ecosystem members including publishers, developers, and promotional firms. Furthermore, we argue that a boundary resource is shaped both by the internal resources of the platform owner (cf. Mohagheghzadeh and Svahn, 2016) and by containing the resources external to the platform owner and within the ecosystem (e.g. making publishers and promotional firms' resources available to the startups).

The accelerator's facilities as a boundary resource, both enhance the generation of complementary apps (resourcing), and impose a control on the quality of the apps and the platform competitiveness (securing). The funding affects the game quality (Haines, 2014) and allows for new innovations in terms of technology and market in line with the entrepreneurs' logic of affordable loss (Sarasvathy, 2001). By financially and knowledgably empowering the startups and facilitating their interactions with the platform and other ecosystem members, the accelerator helps startups to better focus on their core activities of developing and publishing their games, and provide them with tools for an increased chance of market success. All this may eventually enhance the competitiveness of the platform (Boudreau, 2012). At the same time, through mechanisms such as the quality assurance procedure, mentoring, and exclusivity periods, the accelerator makes sure that the startups follow the platform's desired quality and disciplines in the competition, hence *secures* the platform (Rudmark and Ghazawneh, 2011). Our findings indicate that the startups try to take advantage of this boundary resource to be able to better communicate with the platform owner to negotiate about getting their games featured on the store in their markets of interest. As such, they tend to influence the platform owner's market-making mechanisms and make it more favouring to themselves (see Bresnahan et al., 2015; Qiu et al., 2017) . This confirms the crucial importance of communication between the third-party developers and the platform (Rafiq, Ågerfalk and Sjöström, 2013).

6   Conclusion

The main contribution of this GTM study is a model (Figure 1) and our theorizing that demonstrates how the early-stage third-party application developer startups utilize the accelerator facilities in developing and publishing their applications. Our model shows how the startups utilize the accelerator to improve their capabilities and knowledge inside their firms which can affect their game design, access to resources, and improve market-related activities, as well as use the opportunity to influence the platform and access other members of the ecosystem. The accelerator is developed into a boundary resource, through which startups can collaborate more effectively with the platform owner, and use the resources that are provided by other members of the ecosystem with the aim to acquire more users for their app. Since the model presented in this paper reflects only one of our core categories, our future research is to complement the model with the findings related to the second category in order to elevate our initial model to a higher level of abstraction.

Our study has some limitations. Our case is limited to only one platform-owned accelerator and our study is not of a longitudinal nature. It should be noted that AppCampus was the only accelerator to date to have been operated by a mobile platform owner. Although the Windows Phone platform has practically ceased to exist, findings of our study can be still relevant in deepening our understanding of early-stage startup activities on both other current mobile platforms as well as future platforms wanting to enter the smart phone ecosystem.

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