The role of business model and its elements in computer game start-ups

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Abstract. In this multiple case study we interviewed six Finnish computer game start-ups to find out what elements are included in their business models. We identified the key elements and used the analytical hierarchy process to rank the elements. We found out that computer game start-ups see their business model as a synonym to a revenue model and/or a business plan. In an in-depth analysis we identified nine key elements (human capital, marketing, key partners, financing, customer relationship, key activities, innovation process, key resources and customer segment) that have operative importance for these companies. These elements are the building blocks of a business model in the computer game start-up domain. The findings provide improved knowledge on how the business models of game start-ups could be constructed.

Keywords: business model, computer games, start-ups, multiple case study, analytical hierarchy process

1 Introduction

Business models are useful in modern business environments as they allow organizations to understand where their value comes from and how the company in general operates. However, in our earlier study [1] we found out that very little research has been conducted on the role of business models in software companies that could explain their special features and compare their business models to those of other fields, such as mechanical or food industry. Some studies have defined the concept of a business model [2], [3] and some have made observations on software business [4], [5], but there seems to be a lack of research that observes the business model from the software company's point of view instead of categorizing software companies based on their business models. Recognizing this we dived into the business of six computer game start-ups and studied their business models.

These companies build technological solutions, products, not to solve problems, but to give value to customers in other ways, mostly by providing entertainment and experiences. Revenue is not generated directly by the technological solution nor by the experiences offered, but by the business model generating revenue from technology and experiences [6]. As the business varies, it is also probable that the business model must contain variation in parts, relationships and their weighting.

The overall definition of a business model can be described for example by how it captures the way a company functions and creates value and delivers value to the customer and how it converts the customers' responses into profit [7]–[10]. We have

already noted [1] that the definition is ambiguous, and different researchers still see the concept of the business model in a different way.

In this study we aim to answer three questions, which have been touched by the literature but not yet adequately answered [1]. The first question *"How do computer game start-ups define the business model?"* digs into the issue of the concept of business model being young, and thus, as the definition of the term is still somewhat unclear [1], [11], the companies may understand it in various ways. With the second question *"What are the elements of the business models of computer game start-ups?"* we aim to identify the pertinent parts that the managers consider as the elements of their business model. The final question is *"How are the elements of computer game business models prioritized?"* On the basis of interviews, we prioritize the elements.

2 Related research

There has been a lot of discussion of what a business model is, what parts are included and what are not. A common definition is still to be found [11]. Researchers have positioned the concept of business model between business strategy and business processes [2], and it is argued that the business model fills the gap between the two. On one hand, business strategy is a more abstract way to position an organization in the business, and on the other hand, business processes work within the operational level with more detailed ways of doing business. This segmentation is also supported for example in [3], [12], [13]. A business model is more concrete than just the decision to use segmentation, differentiation or cost leadership as parts of the business strategy proposed by [14], yet it is not as concrete as the concept of a business process, which includes detailed processes like management and operational processes. The business model is not a process, but merely description of the steps and key items [11], [15].

Several studies which define business models identify elements that are characteristics to this concept [3], [4], [11], [16]. The variety of elements is great, but the most commonly used ones include for example value production, customers and the revenue model. The variety of included elements has changed during the years, and for example in 2000 it was mentioned in [17] that a business model and a revenue model are complementary but distinct concepts. In more recent studies, the definition has lived on and the revenue model has been included as one element of the business model concept [11]. As the business model concept is closely related to the concepts of revenue logic and revenue model, Sainio and Marjakoski [13] argue that the revenue logic is a part of the business model, and the business model describes who pays and what he gets in return. They position the revenue logic at the strategic level and use the concept of the business model when describing the steering done at the operational level. Some studies use the term component [3], [11], [18] while some talk about elements [4], [16]. They all still talk about the same thing: parts that form the business model.

The business model concept has been studied in several business areas - like health-care [19], airline business [3] and software business [4]. Software business differs from the other business domains in many ways, as it builds intangible products and services that a user cannot experience directly but through user interfaces [20]. In

our literature study [1] we concluded that there were several articles available describing particular areas of the software business, for example, revenue and pricing issues, how the software-as-a-service paradigm is changing the business, what open source and mixed source mean to the business model and what are the difficulties when a software company is expanding to overseas. However, it seemed that no studies existed describing how software companies understand the business model concept, its elements and its use in daily operations.

3 Research process

In this study we follow the multiple case study research method [21], [22] and the framework developed in [21]. The case study has six steps: defining the strategy, reviewing the literature, developing the case study protocol, conducting a pilot case study, conducting a multiple case study, and developing a conceptual model. Our research strategy is determined by the 3 research questions presented above. Reviewing the literature was already done in our previous study [1]. The development of the case study protocol included the decision to use interviews as the data gathering method and the design of an interview guide. We conducted a pilot case study and determined that the protocol was sound. The analysis produced a conceptual model, which is presented in Section 4. To guarantee the validity of the results, we followed principles derived from [21]–[23]. This included for example choosing the data collection procedures (we used interviews), data analysis methods (we used coding) and avoiding being biased (we had more than one researcher present at most of the interviews and conducting the analysis of the collected data).

In the analysis we used the analytic hierarchy process method (AHP), which is widely used in decision making [24]. AHP has been used in various areas, such as selection, evaluation, benefit-cost, priority, development, resource allocation, decision making, forecasting, medicine, and quality function deployment. Alidi [25] used AHP to measure the initial viability of potential industrial projects. Babic and Plaxibat [26] used AHP to rank companies according to their business efficiency, and Sarker et al. [27] used AHP to find out the relative importance of various types of agility in information system development. The characteristics of AHP include suitability to problems with multiple criteria and attributes [28]. Hafeez et al. [29] determined the key capabilities of companies using AHP with both quantitative and qualitative data. In this study we use AHP in a similar way – as a tool to prioritize results based on qualitative data.

3.1 Data gathering and analyzing

We collected and analyzed data from six Finnish computer game start-ups. A majority of them developed mobile games, but there were also experiences in developing PC/Mac, browser and serious games. The study uses data from three interview rounds. The interview rounds one and two provided us with 931 minutes of interview data for background material, and the third round with 507 minutes of data especially aimed for this study. The first round of interviews included team leaders or project managers,

the second round upper management or the owner, and the third one interviews with upper management. In most of the interviews, only one company representative was present, but in two occasions there were more than one person from a company. In total nine persons were interviewed. Information of the companies is presented in Table 1.

The actual interview questions were peer-reviewed within the research group before the interviews were conducted. The questions were open-ended, which enabled also free-form discussions during the interviews. The interviews were sound-recorded and transcribed. The focus of the interviews in the first round was to understand the operational level of software development. The second round focused on marketing, innovating and financing, and the third round focused completely on business issues like customers, revenue models, value propositions, and cost structures.

In this study we have built the interview questions over the ideas of the business model canvas (BMC) developed by Osterwalder et al. [30]. This means that the nine elements (key partner, key activities, key resources, value propositions, customer relationships, customer segments, channels, revenue streams, and cost structure) of BMC were used as the "seed categories" for the interview questions. These categories were modified during the question set-up to be more suitable for the software business, and also new categories appeared. For example, the weight of the channel category of BMC was decreased and the roles of customers and partners increased, as we saw them more important for computer game start-ups. Our final interview themes included six topic groups for the questions: customer; key partners and resources; business model and value proposition; cost structure, modeling and marketing; organization and industry; and reasons why the company was started. These six main topic groups were covered in the questionnaire with 3 to 7 question items in each group. The final questionnaire form is available online at http://www2.it.lut.fi/projects/SOCES/library.

Table 1. Describtion of the organizations.

	Case A	Case B	Case C	Case D	Case E	Case F
Size of the organization	4 persons	4 persons	8 persons	3 full time, 1 part time	4 persons	3 persons
Relatedness to games	Makes games	Makes games	Makes games	Makes games	Makes serious games	Makes games
Number of released games	1st one being developed at the moment	First two being developed at the moment	2	1	2 projects being developed at the moment	1st one being developed at the moment
Years in business	Less than 1	Less than 1	Less than 3	Less than 2	Less than 2	Less than 1
Platform / Customer segment	Smartphones	Smartphones, tablets, browser games	Smartphones, tablets, desktop computers	Browser games, smartphones	Browser games, smartphones	Smartphones

4 Elements of the business model

The topic groups were based loosely on the business model canvas [31]. However, the results indicate that the case organizations emphasize different topics from the ones highlighted in the business model canvas. Some elements match, but some are less important than described in [30].

It was asked from the organization how they have modeled their *business,* to get a rough idea on what they thought about the topic. Case E (interviewed as 1st in the 3rd round) answered that *"Always when things change and such. To be an entrepreneur it is always like going from one crisis to another, but we analyze and go through it."* When asking what tools they used for modeling we got the answers *spreadsheet* and *3rd party analyzers*. After other interviews we understood that the spreadsheet was used to calculate different *revenue model* possibilities, as Case F put it: *"If we put the price like this, and selling is like that, we see how much operating loss we get"*. 3rd party analyzers meant that some public funding partner had required a *business plan* to be supplied with the application letter. So, for these organizations the term *business model* was used to mean a *revenue model* and/or a *business plan*. As the concept of business model in software business is yet to be defined unambiguously [1], we saw that these kinds of interpretations are likely to pop up. This meant that we needed to analyze carefully whether the interviewed case organization talked about the same issues with the same terms than we did. In this study we research business models, not just revenue models or business plans. Although the organizations saw the business model as a narrower issue, we understood their sentiments on a broader scale than just a revenue model.

Another issue to note is the term *customer*. Traditionally companies have been doing business with customers who give them income. With the free-to-play revenue model, games have players who do not give any (direct) revenue to the company. In the free-to-play model the game is distributed free of charge to anyone with a compatible game system. The revenue is gathered through, for example, traditional online advertising, cross-game advertising, and especially in-app-purchasing, which means that the players can for example use the normal weapons provided with the game or spend money to purchase better weapons or unlock advanced features. This creates the dilemma of who is the customer: all players or only those players who give income? When discussing this with the game companies they saw all the players as their customers – whether they pay or not. Case E saw health-care organizations as well as end-users as their customers. If they put their application to app stores, customers are also gained from there. Because of this, we define the term customer to include all the gamers, not just the ones who pay.

Let us consider two elements of the business model canvas [31]: value proposition and channels. In the computer game context all game companies described the value they offer to players as an *entertaining experience*. The overall goal of many conventional utility-producing software systems is to save time or enhance the efficiency of the user, whereas the game business has the opposite goal. The manager of Case D summarized this phenomenon: *"[traditional software] tries to minimize the time a user needs to spend. With games we try to maximize the time spent, and still keep it entertaining."* This is one of the areas that separate the game business from the conventional software business. The whole value proposition is turned upside-down,

and to find similar value propositions, the music, movie and television industry are closer to the game industry than the conventional software business.

In this study we do not concentrate on the value proposition as it was so obvious for the companies – with the slight exception of the serious game maker Case E, which builds entertainment experience but also aims at health-care savings through rehabilitative games. This study concentrates on the business model elements that enable the entertaining experience, as described below with each individual element.

Another different element is the channel used to deliver the product to the customer. The brick and mortar business needs a physical channel to push products to customers, whereas the software industry is moving towards a completely digital distribution of software. For example, mobile games and other apps are purchased and installed via platform-specific digital stores such as Apple's App Store (smartphones) or Valve's Steam (PC workstations). This reduces the time game developers need to use for planning and designing the delivery channel for their products.

4.1 Description of individual elements

We used the ATLAS.ti software to code the interviews and the identified nine business model elements that rose from the data. These elements are the parts that enable business for the case organizations and thus impact the producing of the entertaining experience of the game for the customer. Descriptions of the identified elements are presented in Table 2.

Table 2. Descriptions of the indentified elements.

Element	Description
Customer relationship	The customer relationship element includes all the communication and data collection that takes place with the customer. There are two ways to collect feedback. Firstly communication, where the company discusses with its customers in Facebook, blogs, forums or any other media that allow communication. Secondly, companies collect indirect feedback through their games; what parts of the game are used most, what are not used. All the efforts aim to improve the product and the experience for the customer. The customer relationship element is also used to improve revenue generation methods.
Customer segment	The customer segment denotes how the organization invests to find the best possible way to reach the customers and what kind of persons there are in the target group. In the area of computer games, and especially in mobile games, this means mostly selecting the platform that provides the highest profit for the money spent on development. It also includes research on customer behavior and market segments.
Financing	Financing is a key area in business, and it means getting external funding (e.g. venture capital or loan from a bank) and direct revenue from the product to run the business. As the cases were start-ups, they mentioned both external funding and building a revenue model to generate revenue from the games. Some companies also mentioned an aim to build a brand from their game characters to start getting revenue from merchandising.
Human capital	Human capital means the people working directly in the company. People can work full-time or part-time. All the companies pointed out how important their workers were. Many mentioned how the company was especially formed around their key persons.

Innovation process	In a previous article [32] we examined how these companies innovated and were creative; meaning what methods they utilized to produce creative parts, like new game concepts and characters. We learned that they saw innovation as an important element in the game business, but the methods they utilized were mostly ad-hoc brainstorming, and no structured methods were used.
Key activities	Key activities mean operations that are required to produce a product. A game company has several key activities. In addition to developing and programming, also graphical designing, 3D modeling and usability testing were mentioned. In some cases also music and sounds were key activities when they were done in-house, but some outsourced it as they did not have resources to do them by themselves.
Key partners	Key partners include the parties that help the organization to, for example, produce and publish the product. This means, for example, outsourced arts, music and sounds. Some cases also listed the publisher as their key partner, but not all as some had the aim to publish games by themselves.
Key resources	Key resources mean the assets the organization sees important and could not manage without. The most important resource was the human capital, but also other things were mentioned. As the organizations mature, they gather intellectual property (e.g. brand, game characters). Even the development tools were seen as key resources, as the companies had invested in them. Hardware was not considered as a key resource.
Marketing	Marketing means all the actions an organization does to get more visibility for their products. The case organizations valued marketing, and in this study marketing includes how companies aim to advertise themselves and their games, what kind of research is done on the topic and with what kind of budget the marketing could be done.

4.2   Ranking of elements

We used the Analytic Hierarchy Process (AHP) to rank the found elements on the basis of their importance. The AHP consists of several steps. The main idea is to compare alternatives based on a set of criteria to reach out a goal set beforehand [24], [28]. The goal can be for example choosing the best candidate to vote in presidential elections. After the goal has been set, there are probably alternatives already available, as there is usually more than one candidate for the presidency. Then the decision about the criteria, such as age, opinion about climate change and gun laws is made.

After the initial requirements have been set, a comparison is done. In this study the comparisons were done by the authors of this article based on the gathered data. Comparisons mean that every alternative is compared to each other according to every criterion. This means that there will be N*(N-1)/2 comparisons done with every criterion, where N means the number of alternatives. In our case this means 9*(9-1)/2=36 comparisons per criterion. The comparison is done with numbers 1, 3, 5, 7 and 9. 1 means equal importance and 9 absolute importance, 3 (moderate), 5 (strong), 7 (very strong) being between these opposites. It is also possible to use numbers 2, 4, 6 and 8 if the jump between, for example, 3 and 5 is seen too large. Invert values are used to show the importance on the opposite side.

Based on these comparisons NxN – 9x9 in our case – matrixes are produced and their eigenvector is calculated (Tables 3 and 4). On the basis of these eigenvectors and the weights of criteria, the final value can be calculated by multiplying these two.

These values are used when the actual decision making (e.g. prioritizing) is done. The weight of a criterion can be calculated through the same process as the eigenvectors for the criteria. We have used equal weight for each criterion.

Table 3. Matrix produced from Case A data.

	IP	F	CR	CS	M	KP	KA	KR	HC
Innovation process (IP)	1	1/3	1/3	3	1/5	1/3	3	1/5	1/7
Financing (F)	3	1	3	3	1/5	1	3	1/3	1/5
Customer relationship (CR)	3	1/3	1	3	1/5	1	3	1/3	1/5
Customer segment (CS)	1/3	1/3	1/3	1	1/7	1/5	1/3	1/7	1/7
Marketing (M)	5	5	5	7	1	3	5	3	1/5
Key partners (KP)	3	1	1	5	1/3	1	3	1/3	1/5
Key activities (KA)	1/3	1/3	1/3	3	1/5	1/3	1	1/5	1/5
Key resources (KR)	5	3	3	7	1/3	3	5	1	1/5
Human capital (HC)	7	5	5	7	5	5	5	5	1

Table 3 is a 9x9 matrix which shows how Case A sees Financing as moderately more important (3) than the Innovation process and strongly less important (1/5) than Marketing.

After a matrix has been formulated, it is then squared several times to get more accurate results. In our case, after four multiplications we got three static decimals to eigenvectors, which are presented in Table 4.

Table 4. Eigenvector calculated from the matrix presented in Table 3.

Innovation process	0.038
Financing	0.075
Customer relationship	0.058
Customer segment	0.020
Marketing	0.205
Key partners	0.070
Key activities	0.031
Key resources	0.137
Human capital	0.365

These values are now the weights of different elements for Case A. The same calculation was done to every case and the total values were calculated by multiplying the eigenvalue matrix with vector $[1/6 \ 1/6 \ 1/6 \ 1/6 \ 1/6 \ 1/6]^T$.

AHP does not limit the number of alternatives or the criteria. The criteria can also be divided into sub-criteria if needed. With a consistency ratio and a consistency index it is also possible to check whether the judgment is valid [27], [28]. The process of calculating consistency is described thoroughly in [33].

All the case organizations saw themselves as start-ups, but with some elements they had different weights based on their experiences in the field. The overall ranking and

importance is shown in Table 5. Each weight reflects the importance of the specific element, and the weights are relative to each other.

Table 5. The ranking of business model elements based on the analytical hierarchy process. The three most important elements are highlighted with inverted colors and the least important in gray.

Rank	Element	Weights						
		Case A	Case B	Case C	Case D	Case E	Case F	Total
1	Human capital	0.365	0.318	0.267	0.265	0.350	0.317	0.314
2	Marketing	0.205	0.085	0.035	0.114	0.202	0.209	0.142
3	Financing	0.075	0.203	0.135	0.135	0.056	0.107	0.118
4	Key partners	0.070	0.157	0.185	0.089	0.112	0.068	0.113
5	Customer relationship	0.058	0.050	0.099	0.235	0.122	0.091	0.109
6	Key resources	0.137	0.039	0.086	0.027	0.024	0.038	0.059
7	Key activities	0.031	0.075	0.095	0.042	0.035	0.062	0.057
8	Innovation process	0.038	0.056	0.055	0.054	0.030	0.086	0.053
9	Customer segment	0.020	0.017	0.042	0.040	0.069	0.022	0.035

Based on the empirical data, the most important element was human capital. The companies argued that *"people are the only thing that matters"*, (CEO, Case A) and *"people are the only resource a game company can have"*, (CEO, Case C). No other element was seen as important, and this is natural as it is a question of intangible products and start-up companies.

There was some variation between the case organizations as regards marketing. For example, most of the organizations saw marketing as an important element that they had no experience and skill of. *"We have been going with the idea that we are unknown – invisible – and we don't have marketing know-how. The first games are exported to different countries via a publisher, who then gives us the coverage"*, (CEO, Case D). However, the oldest organization, Case C, described it as an element that was no longer important. *"In the beginning we had lot of marketing and we had our own marketing manager... But now we have noted that in the end marketing plays quite a small role... maybe even more important [than cross-promotion] is the word-of-mouth."*, (CEO, Case C). Mobile game marketing was seen a bit as a black hole as there was no guaranteed way to get a game to become the editor's choice or to any similar promotion position. This led Case C to scale down the marketing efforts. They also trusted their publisher and had already gained success with games, which is something that the other case organizations were still aiming at.

Financing was another element that the companies saw differently. Case B had the most unique way of funding. Where the other organizations had been using personal savings, getting grants and financial support, Case B had chosen to take a loan from a bank: *"To our joint stock company we are applying for a loan... approximately two times 30k euros... so that we can pay a salary to ourselves from the beginning"*, (CEO, Case B). None of the other organizations mentioned anything about loans, but trusted that they would be able to survive with support money to gain revenue from

their games. Free-to-play was the dominating revenue model. Only Case E, which made serious games, mentioned that they were going to license their products to health-care organizations. The rest utilized free-to-play at least to some extent. Some used the best of both models, as Case C described *"Both games started as pay-to-play [later free-to-play] and they also had the in-app-purchasing option straight from the beginning"*, (CEO, Case C).

Key partners were also seen important, as for instance only three of the case companies mentioned that they could actually do the whole game with their own resources, and one of the organizations, Case E, mentioned that *"we would outsource if we had the money"*. Most of the companies outsourced at least music and sound. The publisher was also seen as a key partner, but some companies were considering not using a publisher in their future projects. Yet, key partners were not thought as important as the core employees of the companies. The main sentiment in the companies was that they would try to improve their own output, and beyond that, outsource the rest of the work. *"Voice-overs have been purchased from the US"*, (CEO, Case C). *"We have an art studio [partner] in Bulgaria... ...from them we get high level graphical assets"*, (CEO, Case D).

Also customer relationship divided opinions. For example, Case B, which had not yet released anything, had not thought about getting customer feedback and steering their game development towards the gamers' ideas: *"We do not see it as a problem [understanding customers]... when we get something out, we need to take opinions and getting feedback from blogs and forums"*, (CEO, Case B). Case D saw customer relationships as more important and said that they were going to answer the gamers' questions and had already implemented some of the ideas which they had got from the gamers. *"When our users give comments, feedback or questions, we answer every one of them"*, (CEO, Case D). Case E, which worked with serious gaming, told that for them customer relationships were important, as they needed to be in close connection with medical staff and be able to discuss with doctors and other health-care people to be able to push their games to health-care use. *"We keep close contact with health-care divisions. We have been discussing and negotiating with all the responsible directors and have had meetings with physiotherapists... [through these discussions] we get those pilot patients"*, (CEO, Case E).

With the exception of Cases D and E, all the other had decided to use third-party tools to build their games. Most commonly this meant full game engines, such as Unity 3D. Their idea was to be able to build games in rapid progression, spending months rather than years in development. *"The first version was a plain C++ OpenGL. After that we tried the C++ and Marmalade combo. It made possible for us to have multiplatform software, it abstracted all the interfaces. It was awkward, too. So, after one year of thinking we have now done with Unity in two months more than all the previous work combined"*, (Developer, Case A). Case D had a slightly different approach as they build browser-based games that communicate with a back-end solution, which was seen as one of their key resources. *"We have now developed it for more than a year, so it [backend solution] is our key resource"*, (CEO, Case D).

All the case organizations mentioned the same kind of key activities, including developing a game, drawing graphics, testing the game, promoting the company, and getting grants. User testing was mentioned in many cases as the most important testing activity. As the games needed to provide good experience, the testing feedback from users was considered very important, and was mentioned several times. *"The first step*

is to press the play button in Unity... ...but a developer can be blind to his work, so the next step is to compile it to a test device and give it to someone who has no money involved in it", (CEO, Case A).

The innovation process is discussed in detail in [32]. Generally innovation and creativity are needed when building a game that gives a customer an experience. The case organizations had their own ways of supporting creativity. They used for example idea pitching and brainstorming where all the members of the company had the possibility to tell about their ideas, and subsequently, if the idea was considered feasible, a prototype could be built.

The customer segment was seen very straightforward for the case organizations, as the application store of the target platform (for example Apple's App Store) was the most important release channel, with the exception of Case D and Case E. Case D used HTML5-based technologies and had built their own back-end solution to support their browser-based games and a broader customer segment. Case E developed health-care related games which limited their customer segment, but they had also thoughts of selling their serious games in app stores. *"In the mobile world the basic app could be offered for free, but not our advanced thing. Not a chance, since it has all the hardware and other things"*, (CEO, Case E). Case E also saw the customer segment as more important than the other companies, as it needed to work with different health-care organizations to find customers.

4.3   Summary of the findings

In the beginning we set three research questions: *"How do computer game start-ups define the business model?"*, *"What are the elements of the business models of computer game start-ups?"* and *"How are the elements of computer game business models prioritized?"* We found answers to all these questions.

For the first question we found out that the game companies described the business model slightly differently than what they actually applied in their daily operations. They described marketing and financing as the key parts of their business, but in the analysis the human capital emerged as the most important element – yet it was not identified through talking about *business*, but instead through *key resources*. We interpreted that the companies used the term business model when talking about their revenue model. As the academic literature includes for example the technical platform or channel [4] as elements of the business model, it seems that there is a distinction between the academic and practical definition of the term.

The importance of human capital was significant. As this study has focused on start-ups, it is clear that a company is focused heavily on the persons who founded it. Several company leaders said that people were the only thing that really mattered, and for example specific development tools, which may have cost thousands of euros, were not seen as important, although they would ease the development and fasten the release of the game.

Today's computer games, especially for mobile platforms, are more and more delivered through digital stores. We did not find any evidence that the companies had difficulties in delivering their games. App Store and similar digital software markets ease the delivery process significantly compared to the situation where software is

delivered with physical packages. The problem was not in delivering the game but in reaching the awareness of gamers.

For the second research question we identified 9 elements. Human capital, key marketing, key partners, financing, customer relationship, key activities, innovation process, key resources and customer segment were seen as elements that enable business leading to the entertaining experience of a computer game.

As an answer for the third research question we prioritized the elements with the analytical hierarchy process and found out that the start-ups considered human capital as the most important element of their business model. Marketing and key partners were also considered important.

5 Discussion

This article concerned the application of business models in game industry startup-companies. In the literature we find numerous articles describing the elements of the business model; for example [3] gives an extensive list of these articles. The elements of the business model were gathered from several different industries, and a few studies [4], [16] which described the business model elements used in the software industry were found. Yet, we did not find all of these elements in our studied organizations. We identified nine elements from game companies, which were similar to the identified elements mentioned in previous studies, but even then they were not a complete match. This supports our view that we cannot describe the business model concept by its elements without taking the business domain into account. Our opinion is that we can discuss business models in two ways: A) by using the more abstract concept positioned between the concepts of business strategy and business processes, as presented in [2], [3], or B) by defining the elements that are used in that specific business model. The latter can be very specific, as even not all software business models include the same elements. According to our view, for example the conceptual framework presented in [2] is too abstract to be utilized by start-ups. In this study we concentrated only on computer game start-ups and thus the findings can be applied in the computer game industry and to some extent in other software business, as the computer game industry has similarities with the traditional software industry. It seems that it is not possible to define the concept of business model comprehensively with the elements discovered in previous studies, or at least different elements have very different weights in different business areas. For example, in this study we found out that the distribution channel is not important for computer game companies. The channel is something that does not have to be concentrated on at the moment when Apple's App Store and Google's Play store dominate the mobile markets. On the other hand, human capital and key partners were seen as important elements, but for example Schief and Buxmann [4] do not mention these in their framework.

Besides the theoretical findings presented in this article, the aim was also to help computer game start-ups. This article provides knowledge on what are seen as important elements in the starting computer game business. This may give new ideas to other start-ups, who might not have noted all the issues presented in this article.

We studied six computer game start-ups in Finland. This means that the sample size was small and homogeneous. However, all the companies were aiming at the international markets with their products, the companies covered different release

platforms and genres, and were developing games as their main source of income, so the companies did have variance and were representative organizations of the games industry. We had four different interviewers to avoid interviewer bias, two people conducting the data analysis to avoid observational bias, and the article was discussed extensively with three people familiar with the data to avoid personal bias. Although the findings were consistent throughout the study, further research is required for a better validation of our findings. In addition, the results of qualitative studies should be considered as suggestions or practice-based recommendations outside their original scope and environment.

6 Conclusion

In this study we observed six computer game organizations and how they had built business around their software products – games. All organizations were start-ups and they were still small in size and had limited experience in the field of software business. We performed a multiple case study to find out what the organizations were doing in practice. We used the analytical hierarchy process to prioritize the key business model elements found in the data.

We discovered nine elements that are crucial when starting a computer game business: human capital, marketing, key partners, financing, customer relationship, key activities, innovation process, key resources and customer segment. We found out that the case start-ups weighted the human capital as the most important element in their business. Their understanding of the concept of a business model was greatly focused on the revenue model and was not in line with the academic version of the concept. The organizations also considered for example the distribution process as straightforward and did not see it as an important part of their business, as described in previous studies. Our assessment on this observation is that this feature is a unique part of the mobile game business, and is different from the traditional brick and mortar industries, even from most areas of the software industry.

This led us to the more theoretical finding that the business model as a concept is not completely defined with elements that are transferable between different areas of industry. For each industry, business models are comparable only in specific cases, like mobile games, where all the organizations utilize similar elements.

Our future research will focus on the validation of the weights of the computer game business model elements with a larger number of organizations and studying the key elements more thoroughly.

Acknowledgement

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