

Finnish Mobile Gaming Cluster

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<p>Abstract</p> <p>The Finnish mobile gaming cluster is one of the most promising industries that have been growing significantly in the past few years to become a substantial cultural export product / service of Finland. The main objective of this research was to gain a persuasive understanding about the emergence of the mobile gaming cluster in Finland and explore the factors behind its success.</p> <p>The literature review centers on M. E Porter's publications on competitiveness and other publications in the same field. Porter's diamond model was employed as a theoretical framework to analyze the competitiveness of the Finnish mobile gaming cluster and a SWOT analysis utilized to find the strengths, weaknesses, opportunities of, and threats to the mobile gaming cluster.</p> <p>The research approach was that of a case study methodology. Multiple sources of data were applied to carry out the research. Secondary data was collected from industry publications, media, relevant company reports etc. Primary data was collected through semi-structured interviews with Finnish mobile gaming cluster members about their experiences and expectations regarding the future development of the Finnish mobile gaming cluster. In doing so, five e-mail interviews and four face-to-face interviews were conducted.</p> <p>Excellent technological skills and innovative young workforce are the main strengths of the cluster while lack of experience in global marketing and poor marketing strategies are the major weaknesses. Even though there are threats of new entrants, there are plenty of opportunities for the cluster especially in new markets like Asia, which has shown great interest through investment in Finnish companies.</p> <p>The authors suggest for further research to be carried out on the interaction of the cluster participants and also new business platforms for the mobile gaming industry. The main limitations experienced were insufficient availability of data and some data being in Finnish language. The research implication maybe significant to start-up companies, policy makers and investors in the in this cluster.</p>		
Keywords Mobile Games, Finland, Cluster, Gaming industry, Game development, Finnish games, competitiveness		
Miscellaneous		

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LIST of ABBREVIATIONS

CAGR - Compound Annual Growth Rate

CEO - Chief Executive Officer

CIA - Central Intelligence Agency

COO - Chief Operations Officer

ESA - The Entertainment Software Association

EU – European Union

GDP - Gross Domestic Product

ICT - Information and Communications Technology

IGDA - International Game Developer Association

IP - Intellectual Property

NASA - National Aeronautics and Space Administration

PC- Personal Computer

R&D&I – Research and Development and Innovation

ROI – Return on Investment

TBA - To Be Announced

1 INTRODUCTION

1.1 Background of the Study

Electronic games are interactive games operated by computer circuitry on numerous platforms. The most popular platforms for these games include personal computers, arcade consoles, video consoles that are connected to television sets, cellular phones, hand-held game machines and server based networks. The history of computer games dates back to the 1950's when computer science students and technical staff created computer games for amusement or as display to visitors who visited their laboratories. By the late 1970's, electronic games were designed not only for university computers but also, for home computers (Haggerty, 2012).

Significant progress has taken place in the gaming industry over the years. A Series of technical advancements and continued development have facilitated the evolution of the gaming industry from console and computer based content to mobile and hand held device -gaming. Mobile phones have evolved from simple black and white communication devices to smart phones which are being used for multiple purposes; business, education, entertainment, social networking etc. To meet mobile phone users' needs and expectations, numerous mobile phone applications are launched frequently. Mobile phones, due to their improved capabilities have presented another platform for mobile games. Nokia was among the first mobile phone companies to release a mobile game *Snake* in 1997. Apple's introduction of the iPhone and App store stabilized marketing and distribution of mobile games throughout the world. Mobile game developers explored new platforms e.g. social networks and virtual communities for online games thus, developing the cultural impact of electronic games (Haggerty 2012)

According to a study by Mobithinking (2014), the worldwide smart phone use has surpassed the 1 billion mark. Smart phone penetration had reached 1.038 billion

units by end of 3rd quarter 2012. With this rapid growth, the number of smartphone users is expected to be 1.76 billion by the end of 2014. This growth is expected to have a direct impact on the mobile based gaming cluster.

Mobile gaming in Finland is the fastest growing division in the entertainment business. During the last couple of years, the Finnish mobile game industry has become well known around the globe. It is one of the fastest developing industries for the last decade with phenomenal success and incredible growth rate. The story of Finnish mobile gaming started in mid-eighties (1980s). The first company which still exists was established in 1995. The total value of the gaming industry outstrips 2 billion euro, and the turnover is close to 1 billion euro (Tekes 2014).

According to Bershidsky (2013), a Finnish company, Supercell is a co-creator of four of the top five top-grossing games in the US. Supercell is now the world's highest valued mobile application company with the revenues growing sharply from a mere \$ 203,000 in 2011 to 178 million in the first quarter of 2013. Most of the revenues come from two of its strategy games; *Clash of Clans* and *Hay Day*. Bershidsky (2013) argues that the high mobile penetration rate of about 1.8 devices per person, and mobile-game addiction among the Finns are contributing factors to the success of this cluster. He adds that 2 out of 3 people play video games at least once a month.

This study is aimed at exploring the general situation of the Finnish mobile gaming cluster. Particular attention is paid to factors behind the success of the cluster and potential opportunities for further growth. To achieve this, Michael Porter's diamond model will be applied to clearly analyze how different variables have been integrated in the success of the cluster.

1.2 Purpose of the Study

The general purpose of this study is to assess the overall situation of the Finnish mobile gaming cluster. Firstly, the study will identify and explore the mobile game cluster as well as evaluate its competitiveness. Deeper analysis will be conducted by applying Michael Porter's diamond model. Moreover, the research will address the strengths, weaknesses, opportunities and possible threats to the Finnish mobile gaming cluster.

The results of this study are expected to benefit people and organizations interested in developing or forecasting the mobile cluster in Finland. At the same time, this research report will provide a good foundation in the field that will inspire and update those who want to do further research and participate in this fast growing industry in Finland. In this regard, it may act as a reference material.

The general objective of this study is to describe the situation of the mobile gaming cluster in Finland with particular attention to variables that have led to its growth.

The specific objectives are:

- i. To have a persuasive understanding about the emergence of mobile gaming cluster in Finland.
- ii. To explore the factors behind the success of the industry.
- iii. To discover new phenomena and new opportunities for mobile gaming cluster.
- iv. Provide suggestions for the future researcher(s) and the people who want to work in this industry.

The main focus of this study is the mobile gaming cluster in Finland. A number of players in the cluster e.g. companies will be mentioned or analyzed briefly to provide needed information. The research will be carried out between 2013 and 2014.

This study will attempt to answer the following questions;

- i. How did Finland emerge as a location for mobile gaming industry?
- ii. What are the strengths, weakness, opportunities and threats of Finnish mobile gaming cluster?
- iii. What is the competitiveness and future of Finnish mobile gaming cluster?

To acquire suitable information, the study will take an exploratory research approach. This approach was chosen because it is flexible and dynamic and can be rooted in pre-existing data. It also increases the understanding of a subject by retrieving, investigating, evaluating, comparing and synthesizing both old and new information in the mobile gaming cluster. The approach will help to reveal the prevailing situation of the gaming cluster. Data will be collected from articles, official and unofficial reports, journals, blogs, books, interviews and other online sources to substantiate the research.

To have a clear view of Finland's comparative position with regards to competition in the mobile gaming industry, we have employed Michael Porter's diamond model for analysis. This model will be appropriate because it explains how various elements interact to shape the environment under which key players in the industry operate. (Porter 1998, 173) A further investigation of strengths, weaknesses, opportunities and threats for Finnish mobile gaming cluster, will be conducted using SWOT analysis.

1.3 Structure of the study

This research is comprised of six main parts; Introduction, overview, literature review, methodology, results, discussion and conclusion. The first chapter introduces the research study. It gives a justification for the study, objective, research questions and scope of the research. The second chapter is overview and this chapter will give

readers a brief idea about Finland, roots of Finnish gaming industry, Finnish mobile gaming industry and finally Finnish mobile game cluster. The third chapter is literature review. This chapter talks about the concept of clusters, competitiveness, Michael Porter's diamond model and SWOT analysis.

The fourth chapter; methodology, explains the research approach, design and instruments used to collect data about the topic. The fifth chapter is a presentation of results of the study. The sixth and final chapter involves discussion of results and conclusions drawn. Here, conclusions and recommendations will be made for further study.

2 OVERVIEW

This chapter provides brief overviews of Finland, the roots of the Finnish gaming industry, the Finnish mobile gaming industry and the Finnish mobile gaming cluster.

2.1 Finland

Finland officially the Republic of Finland is a country located in the far north of Europe, sharing border with Sweden, Russia and Norway. It's a country of forests and lakes. After being part of Sweden seven centuries (12th century to until 1809) Finland ruled by Russia another 108years (Europa, 2014). Finland achieved independence after the Russian revolution in 1917. The total area of Finland is 338 000 km² and population is only 5.4 million. Finland became the member of the EU in 1995 and since 1996 Finland is the member of Schengen. The country joined Eurozone in 1999 (ibid). Unlike other Nordic, EU member countries, Finland's national currency is the euro. (BBC, 2014). The table 1 below shows the key economic indicators of Finland. There multiple sources are being used in making table below.

Table 1 Key Economic Indicators of Finland

(Sources: Economy watch, 2014; UNdata, 2013; Trading economics, 2014)

GDP per capita (present prices, \$ US)	46995.33
Rate of unemployment	8.061
Internet use / 100 inhabitants	91.5
Imports (million \$ US)	74528.73
Exports (million \$ US)	71662.73
Key trading countries (Exports %)	Sweden (11%), Germany (9.3%), Russia (9.0%), United States (6.8%), and Netherlands (6.0%)
Key trading countries (Imports %)	Russia (16%), Germany (13%), Sweden (10%), China (8.3%), and Netherlands (5.6%)
Current Account Balance (% GDP)	-1.7%

Now Finland is a modern developed country with a competitive economy. It is presently among the top performers in the European Union. The country's economy is the 19th freest in the 2014 Index and freedom score is 73.4 (Heritage, 2014). The GDP of Finland is comprised of services (71.9%), industry (25.1%), and agriculture (2.9%). Finland is historically good in manufacturing wood, metal, engineering, electronics industry and telecommunications industry. Nowadays; ICT, gaming, clean-tech and biotechnology sectors are boosting the Finnish economy (World Fact book, CIA, 2014). Finland's major trading partners are Sweden, Russia, Germany, China, USA and the Netherlands. The main export commodities for Finland consist of engineering products, refined petrol and petroleum products, transport and telecommunications equipment, pulp, paper and lumber products, glass products, chemicals, stain less steel and iron. (Europa, 2014).

2.2 Finnish Gaming Industry

The Finnish gaming industry has grown steadily over the last three years and has become well known around the globe (Tekes, 2014). Finnish mobile games are one of the main reasons of that success. Finnish game companies develop games for different types of existing platforms but a major part of the companies develop mobile games (Neogames, 2014, 2). The information on the Finnish game industry is relatively insufficient. Most of the reports are done by two Finnish organizations called Neogames and Tekes. To get the real idea of the Finnish mobile gaming industry, we have to go back to mid - 80's. It is difficult to approach only the mobile game industry because of the versatility of the Finnish game industry. That is why we will discuss the Finnish game industry as a whole in this part.

2.2.1 Roots of Finnish Gaming Industry

Here we will start with brief history of the Finnish game industry. People think the game industry is a new phenomenon in Finland which is not the case. The Finnish game industry started to grow in the mid-eighties. In The beginning of the 80's, playing computer games and game developing was a hobby for few people. In 1984, the first commercial products were launched, and in 1986 the first international game; *Sanxion* came out (Neogames, 2014, 4). The early and mid-90's was an important period for the Finnish game industry. The first assembly event was held in Finland in 1992. Two game companies, Remedy and Housemarque, were founded in 1995. Later, PC game; *Max Payne* was released by Remedy. *Max Payne* was a big success it is a good example of the success of the Finnish game industry (Hiltunen, 2013).

Then a new era began in the Finnish game industry. The mobile games started to lead the progress of the Finnish game industry in 2003. The year 2003 is considered as an important year for the Finnish mobile game industry. Three mobile game companies Relude (now known as Rovio), Sumea and Digital Chocolate were founded starting their operation in Helsinki, Finland (Hiltunen, 2013, 8). Again, in 2003, Nokia

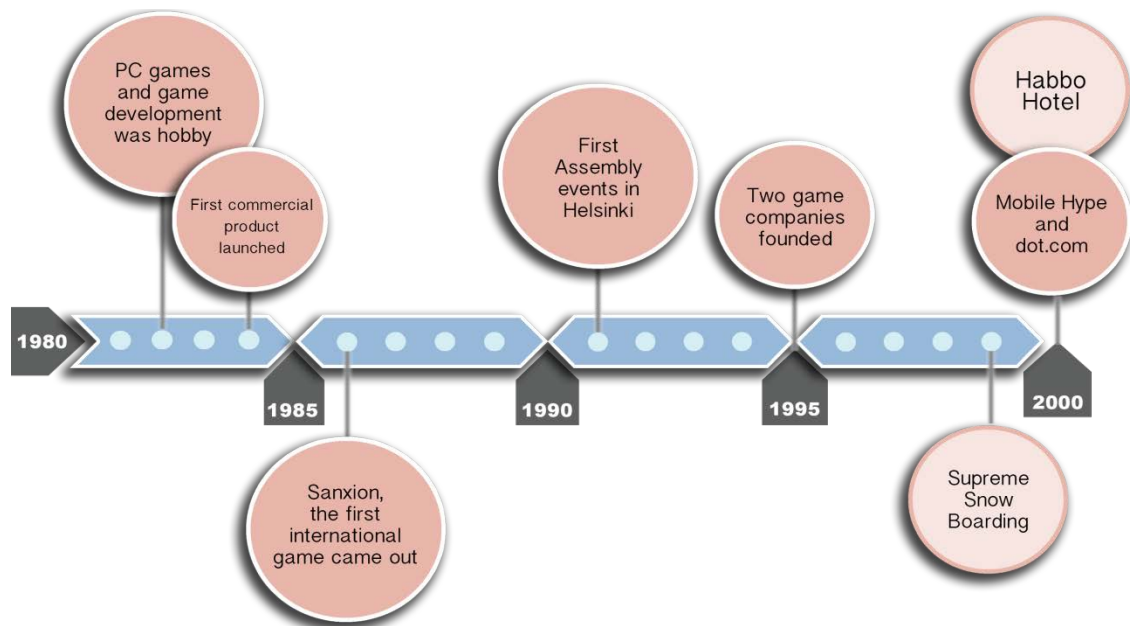
joined the mobile gaming market with its gaming phone 'N-Gage' even though that was considered a failure. In 2005, when Facebook and Appstore games were born, huge changes took place in the mobile game industry (Hiltunen, 2013, 8). The real success story of the Finnish mobile gaming industry started in 2009 when, *Angry birds*, developed by Rovio drew massive global interest to the Finnish mobile gaming industry. Later, Supercell joined with their two record breaking top grossing games *Hay Day* and *Clash of Clans*. Those successes really helped them to attract foreign investment towards the Finnish mobile game industry. As a result Japanese companies Gung Ho and Softbank acquired 51% of the Supercell for € 1.2 billion (Neogames, 2014, 5). The Finnish mobile game industry has been growing strongly for a decade and it will keep going like this in the future.

The important years for the Finnish game industry are given below (Hiltunen, 2013, 8-9) and (Neogames, 2014):

- 1984 – The First commercial gaming magazine was published.
- 1992 – An assembly event was held in Finland for first time.
- 1995 – The very first gaming companies Remedy and Housemarque were founded.
- 1999 – Supreme Snowboarding released by Housemarque for PC. The game was big hit and sold over 1.5 million titles.

Figure 1 Important years of Finnish gaming industry

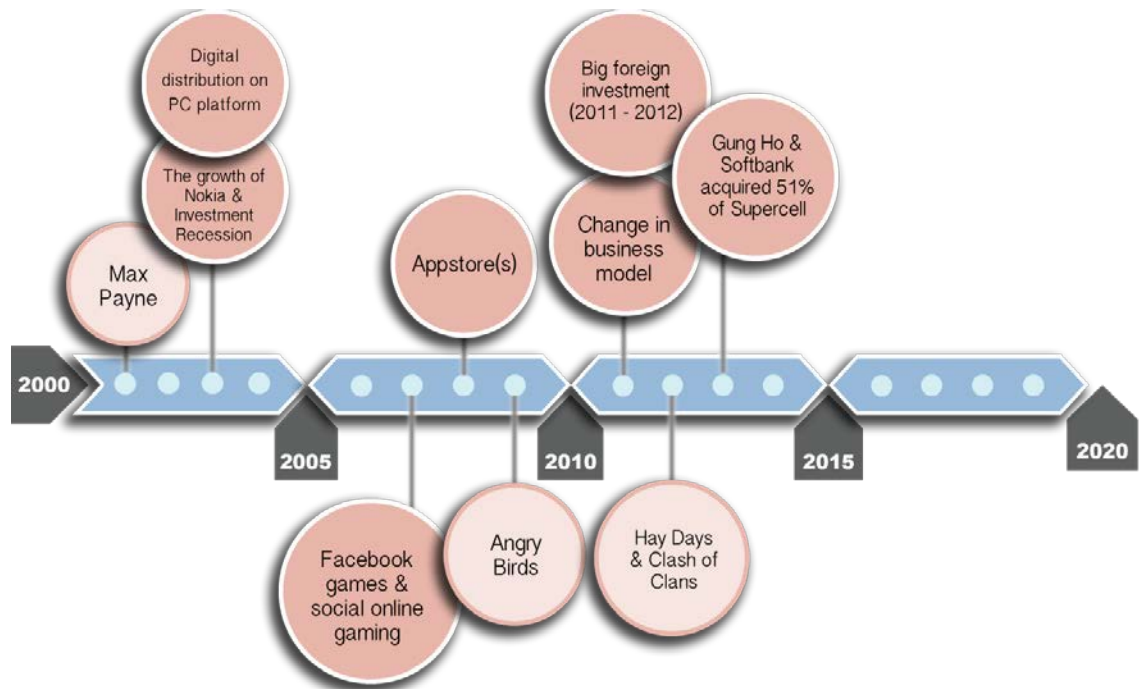
(Source: Neogames, 2014)



- 2001 – PC and Playstation game Max Payne released by Remedy and sold over 5 million titles.
- 2003 – A Mobile game company called Relude was established, and now it's known as Rovio.
- 2003 – Nokia entered into console and mobile gaming market with their gaming mobile phone “N-Gage”.
- 2003 – Mobile game company Sumea was founded by Ilkka Paananen.
- 2003 – Digital Chocolate was established by Trip Hawkins. Digital Chocolate is a company that operates by developing mobile games. One of their business sites is located in Helsinki.
- 2004 – Digital Chocolate bought Sumea.

Figure 2 Important years of Finnish gaming industry

(Source: Neogames, 2014)



- 2004 – Facebook begun its operation and it became a game development platform for game developers.
- 2008 – Apple and Google opened App Store and Andriod Market respectively.
- 2009 – Rovio published Angry Birds for iOS.
- 2010 – Remedy published Alan Wakeand which game was chosen as “the game of the year” by Times Magazine while Rovio’s Angry Birds was the second in their ranking.
- 2010 – The game company Supercell was founded.
- 2011 - Supercell raised € 9.4 million of funding from Accel Partners.
- 2011 – Rovio announced the results of € 3.3 million fundraising.
- 2011 – Remedy made their debut on the mobile platform with their game Death Rally.
- 2012 – Rovio announced € 48 million as the revenue of 2011.

- 2012 –With cooperation of NASA Rovio published Angry Birds Space.
- 2012 –Clash of Clans and Hay Day released by Supercell.
- 2012 – Rovio Entertainment released the Star Wars themed by Angry Birds.
- 2013 – 51% of Supercell was acquired by Japanese companies Gung Ho and Softbank with € 1.2 billion (\$ 1.5 billion).

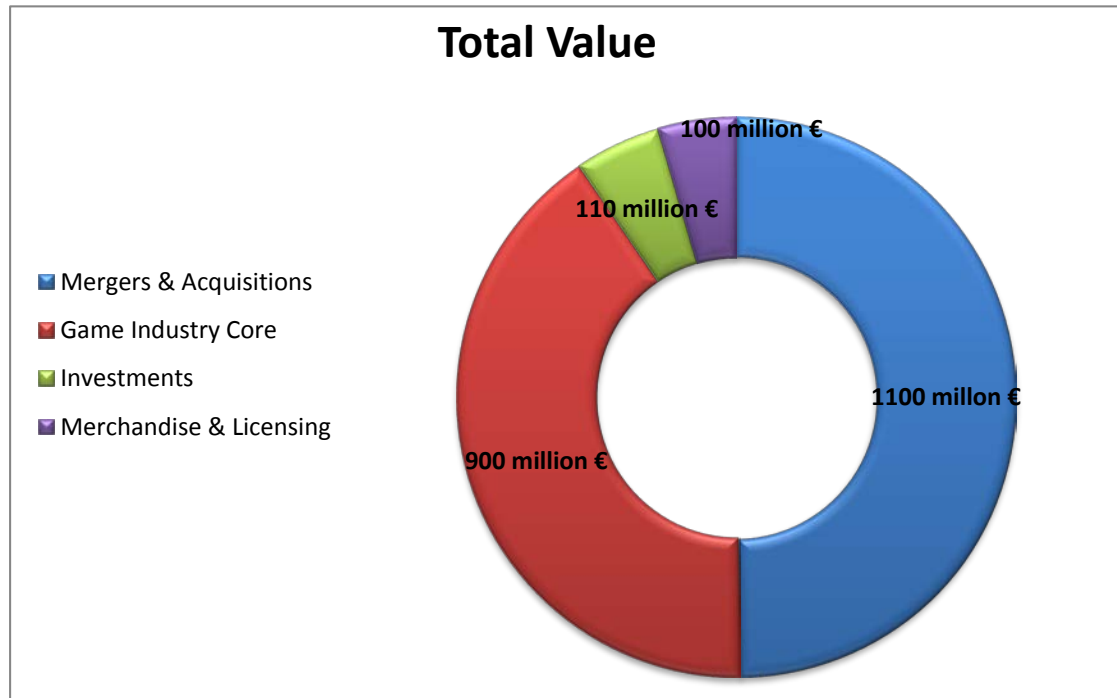
2.2.2 The Rise of the Finnish Gaming Industry

In this part we will address recent activities of Finnish gaming industry.

Recent statistics by Neogames (2014) (the Finnish Funding Agency for Innovation) showed that the total value of Finnish game industry is € 2210 million. Almost half of it came from mergers and acquisitions, which values € 1100 million while game industry core, investment and merchandise & licensing value € 900 million, €110 million and € 100 million respectively. Total value of Finnish game industry is rising by time to time.

Figure 3 Total Value of Finnish Gaming Industry

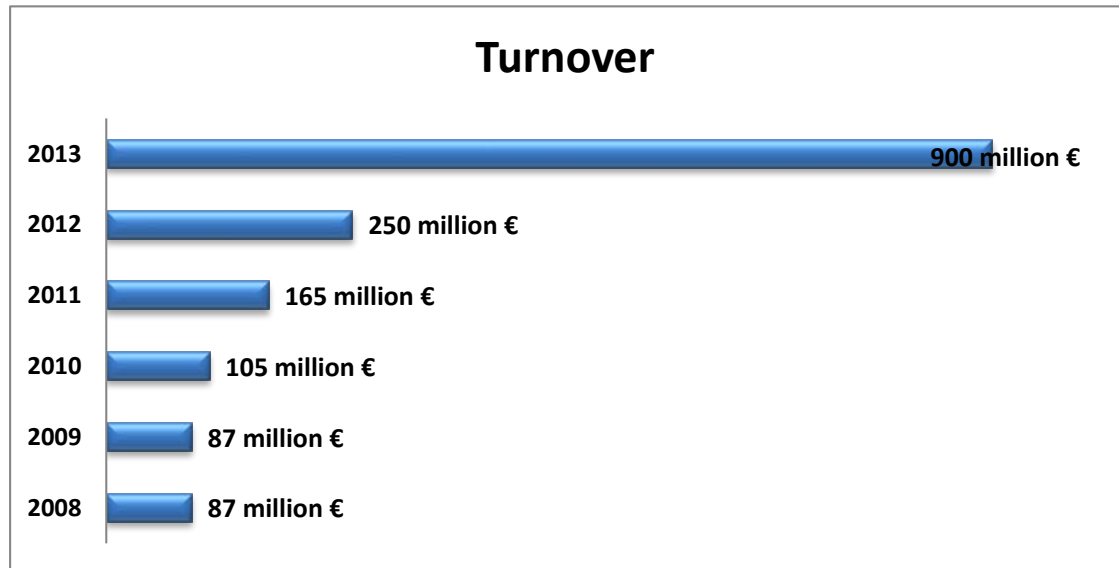
(Source: Neogames, 2014)



The total turnover of Finnish gaming industry core is € 900 million in 2013. It has been gradually increasing since 2009. The total turnover increased slightly from € 87 million in 2009 to € 105 million in 2010. In 2012 the total turnover reached to € 250 million. Then we can see a dramatic change in total turnover (€ 900 million) in 2013; the growth is 260% from the year before.

Figure 4 Total Turnover of Finnish Gaming Industry

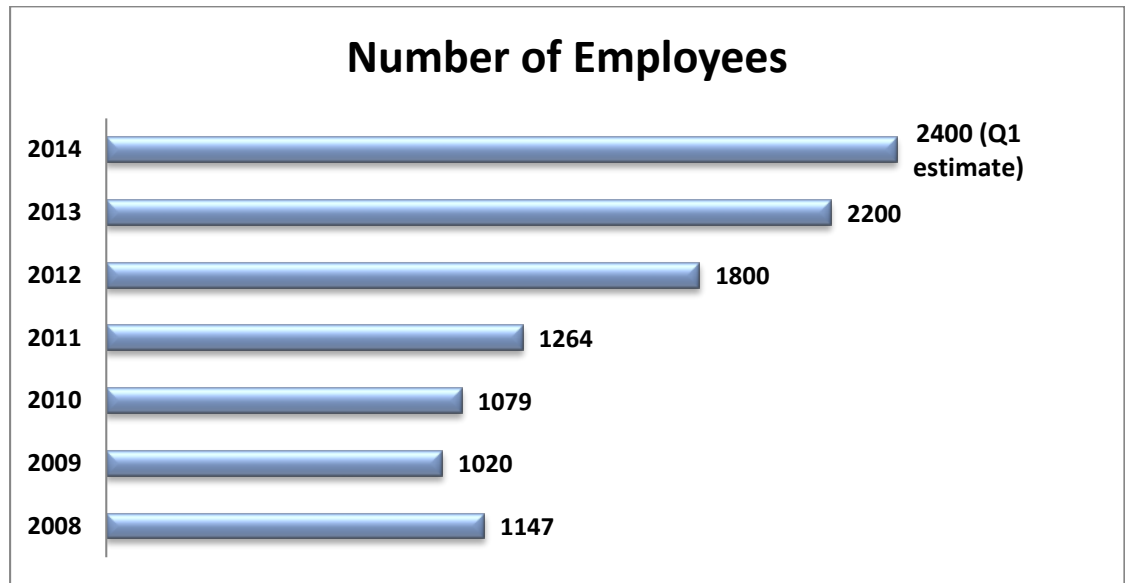
(Source: Neogames 2014)



As the gaming industry growing faster it's creating new job opportunities. After the first quarter of 2014, we can see there 2400 employees involved in gaming industry. The number of employees got doubled in last 4 years. The number of employees declined by 5.9% between the years 2008 and 2010 (from 1147 to 1079). Again the number of employees started to increase from the 2011; since then the number of employees increased by 97.5%.

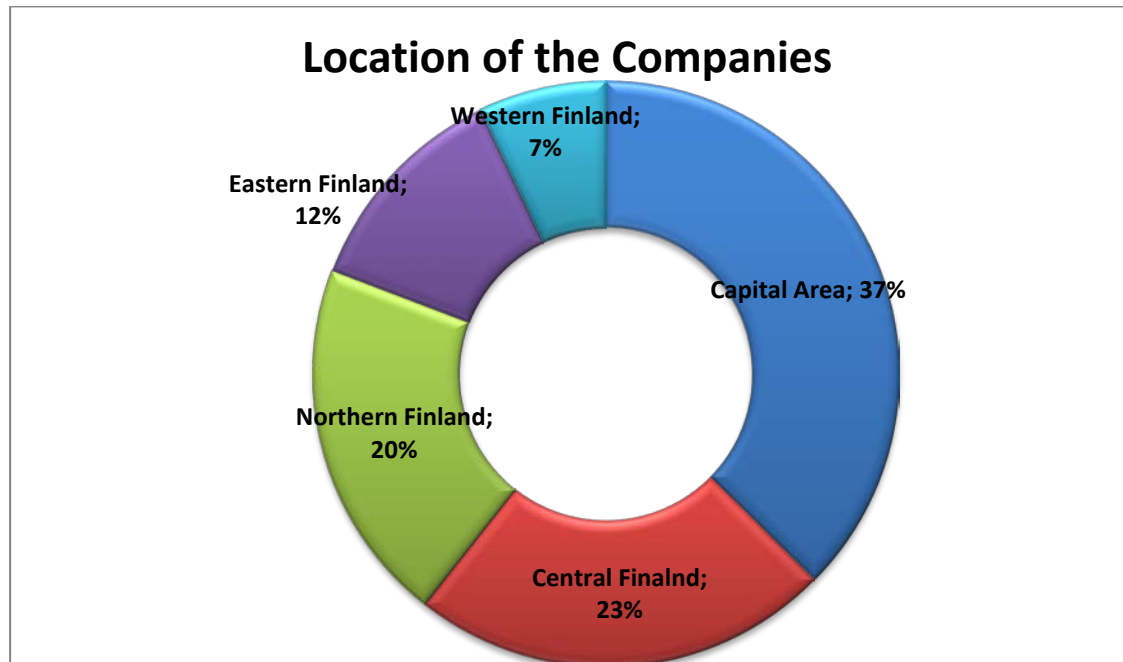
Figure 5 Numbers of Employees

(Source: Neogames, 2014)



Finnish game industry consists of over 200 companies. More than 50% existing companies have been founded in the last few years (Neogames, 2014). The companies are located all over Finland. There are 37% companies in the capital area, while 23% of the companies are based in central Finland. Northern Finland, Eastern Finland and Western Finland comprise of 20%, 12%, and 7% of companies respectively (Neogames, 2014). A lot of the successful companies are based in the capital region although growth of game industry is swift in other regions too.

Figure 6 Locations of the Companies
(Neogames, 2014)



2.3 Finnish Mobile Gaming Industry

The success of Rovio and Supercell has helped and inspired the new mobile game developers to come into the industry. There are more than 200 game companies operating their business in Finland. Most of them are small and medium sized company. The number of companies established significantly in last couple of years (Tekes, 2014). Neogames is working as a hub of Finnish game industry. There are few regional game associations also who have been working with local game developers. The table 2 below shows the total transactions that made on only Finnish mobile gaming industry.

Table 2 Financial Transactions of Finnish Mobile Gaming Industry
(Source: Neogames, 2014)

Company Name	Business Type	Transactions Amount	Transactions Year
BOOMLAGOON	Mobile games	\$ 3.6 million	2014
PLAYRAVEN	Mobile games	\$ 2.3 million	2014
NEXTGAMES	Mobile games	\$ 6.0 million	2014
SUPERCCELL	Mobile games	\$ 1.5 billion	2013
		\$ 130 million	2013
		\$ 15.0 million	2011
SONGHI	Multiplatform	\$ 0.7 million	2014
		\$ 2.9 million	2013
		\$ 0.08 million	2012
		\$ 1.1 million	2011
BEIZ	Mobile games	\$ 1.0 million	2012
OVELIN	Mobile games	\$ 1.4 million	2012
ROVIO	Mobile games+ licensing	\$ 42.0 million	2011
SERIOUSLY	TBA	\$ 2.3 million	2013
APPLIFIER	Game play recordings	\$ 4.0 million	2012
		\$ 2.0 million	2011
SMALL GIANT GAMES	Mobile games	\$ 0.8 million	2013
GRAND CRU	Mobile games	\$ 11.0 million	2013
		\$ 2.0 million	2012
GREY AREA	Mobile games	\$ 1.9 million	2011
Name of the Company	Type of Business	Amount	Transactions Year
BOOMLAGOON	Mobile games	\$ 3.6 million	2014
NEXTGAMES	Mobile games	\$ 6.0 million	2014
ROVIO	Mobile games+	\$ 42.0 million	2011

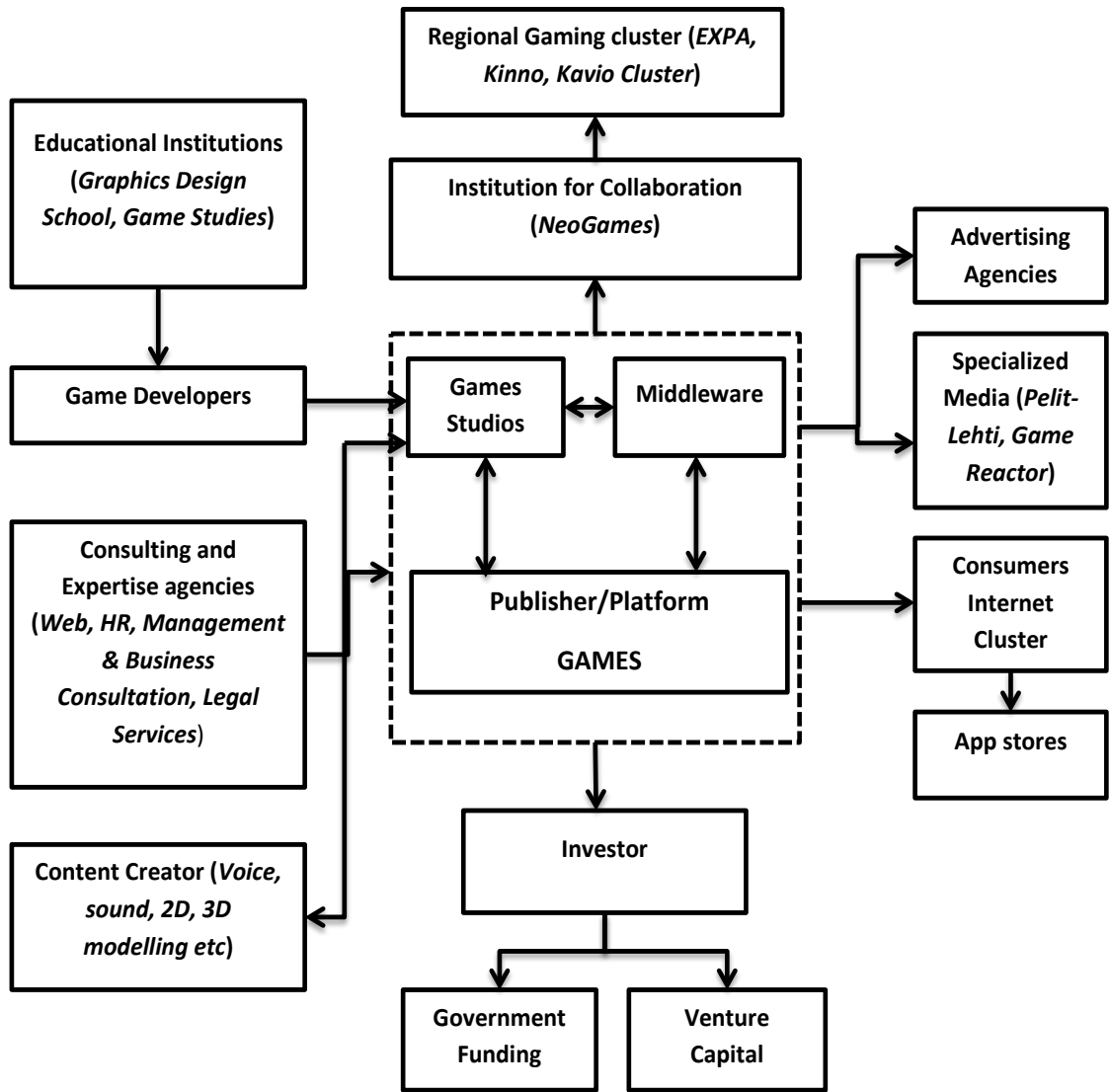
	licensing		
PLAYRAVEN	Mobile games	\$ 2.3 million	2014
SONGHI	Multiplatform	\$ 0.7 million	2014
		\$ 2.9 million	2013
		\$ 0.08 million	2012
		\$ 1.1 million	2011
SUPERCCELL	Mobile games	\$ 1.5 billion	2013
		\$ 130 million	2013
		\$ 15.0 million	2011
SERIOUSLY	TBA	\$ 2.3 million	2013
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		\$ 2.0 million	2012
APPLIFIER	Game play recordings	\$ 4.0 million	2012
		\$ 2.0 million	2011
OVELIN	Mobile games	\$ 1.4 million	2012
GREY AREA	Mobile games	\$ 1.9 million	2011
BEIZ	Mobile games	\$ 1.0 million	2012

As mentioned above the Finnish game cluster is mobile oriented. Over 80% of the companies work on mobile platform as their primary platform to develop games (Tekes, 2014). The total transaction made on Finnish gaming industry is \$ 1.73 billion in between the years 2011 to 2013. And almost \$ 1.7 billion transactions only made on mobile gaming industry (Neogames, 2014, 8-9). The number of mobile phone user getting bigger day by day. Mobile devices are estimated to surpass PCs and laptops as the most common device in 2015 at the latest. People are comfortable and interested to use small devices rather than bigger devices (such as laptops). Especially smart phones are going to be the standard gaming device of the future and that's the advantage of the mobile games industry. The Finnish mobile games will lead the total game industry of Finland in future.

2.4 Finnish Mobile Gaming Cluster

The illustration of the Finnish mobile gaming industry cluster map in figure 6 shows that the game publisher or the platform of the game acts as the center of gravity of the industry. The related elements have been built around the centerpiece. The game studios are also important to the cluster. The publisher and game studios are strongly connected to each other. In some cases, the game studios act as publishers of the games. There are some related industries and associated services involved with the Finnish gaming cluster. Associated services are vital for enhancing the prerequisites of the cluster growth. The investors, consulting and expertise agencies and distribution channels provide for associated services in the cluster. On the other hand, the related industries are considered the most prominent element in the increasing cluster demand; incorporating a range of industries and organizations. Specialized media, advertising agencies, consumer electronics and educational institutes comprise related industries in the Finnish gaming industry cluster. If we go through the Finnish gaming industry cluster, we will see that there are some national and regional association co - operating with the start-up companies and those who are involved in the gaming industry. Neogames is known as the hub of the Finnish gaming industry. They function as the core of the whole game industry. Then, the investments come from the government or venture capitalists. Tekes (the Finnish Funding Agency for Innovation) plays a big role in investments. According to the Neogames' website, Business Angels Finland (an investing organization) also invests money in the gaming industry. There are 17 universities providing game studies (Neogames, 2014). That is the source of skilled labor (game developers) for the gaming cluster in Finland. Google Play, Windows market place and Apple's Appstore also serve as suppliers as they provide the game development firms with a digital distribution medium, and the distribution channels are highly dependent on game development companies. The authors have illustrated the cluster map below.

Figure 7 Finnish Mobile Game Cluster Map



3 LITERATURE REVIEW

3.1 Clusters

The economic concept of clusters was first revealed by the legendary economist; Alfred Marshall in the late 1800s. Alfred Marshall wanted to learn about England's industrial districts and the economic advantages of their high levels of geographic concentration. He thus noted a trend by industries where, once they identified locality/localities for operation, they were probably going to remain there for lengthy periods, such they would create opportunities for subsidiary trades to grow up around it, supplying it with implements, materials and coordinating its business. Such industries lead to growth and development of highly specialized subsidiary industries as well as offer a constant market for skills (Marshall 1920, 156)

The concept of clusters was rejuvenated in the mid 1980's by Professor Michael Porter in an effort to comprehend why some firms based in particular nations, business environments or regions were able to attain global success while others in other regions were not able to. At the time, the phenomena of clustering, regional specialization and industrial concentration were recognizable across the globe. Clusters could already be seen in many fields across the world e.g. movie making in Hollywood, fashion in Milan, high-tech in Silicon Valley, lithography in Switzerland and Germany , biotech in Boston, financial services in London etc. (Sölvell, 2009).

According to Porter (1998), Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters include a selection of linked industries and other entities important to competition e.g. suppliers of specialized inputs and services, manufacturers a, customers and governmental institutions.

Modern-day competition heavily relies on productivity, as opposed to access to inputs or level of particular enterprises. Possession of bountiful resources cannot determine competitiveness. Productivity stands on how companies compete, not in the particular fields they compete in. Clusters affect competition by; raising

productivity of firms based in an area, driving the direction and pace of innovation, and by stimulating formation of new businesses (Porter 1998)

3.1.1 Clusters and Productivity

Well-developed clusters enable companies to coordinate with each other, share information, technology, source for inputs, and assess and stimulate improvement. They promote growth of deep and specialized supplier base(s) within proximity thus reducing transaction costs. In most cases, clusters are cost effective because they heighten integration among companies. High integration among companies leads to accumulation and transfer of technical and competitive information, extension of markets, and trust emanating from personal relationships. They also lead to complementarities i.e. products complement one another in meeting customer's needs (Porter 1998).

3.1.2 Clusters and Innovation

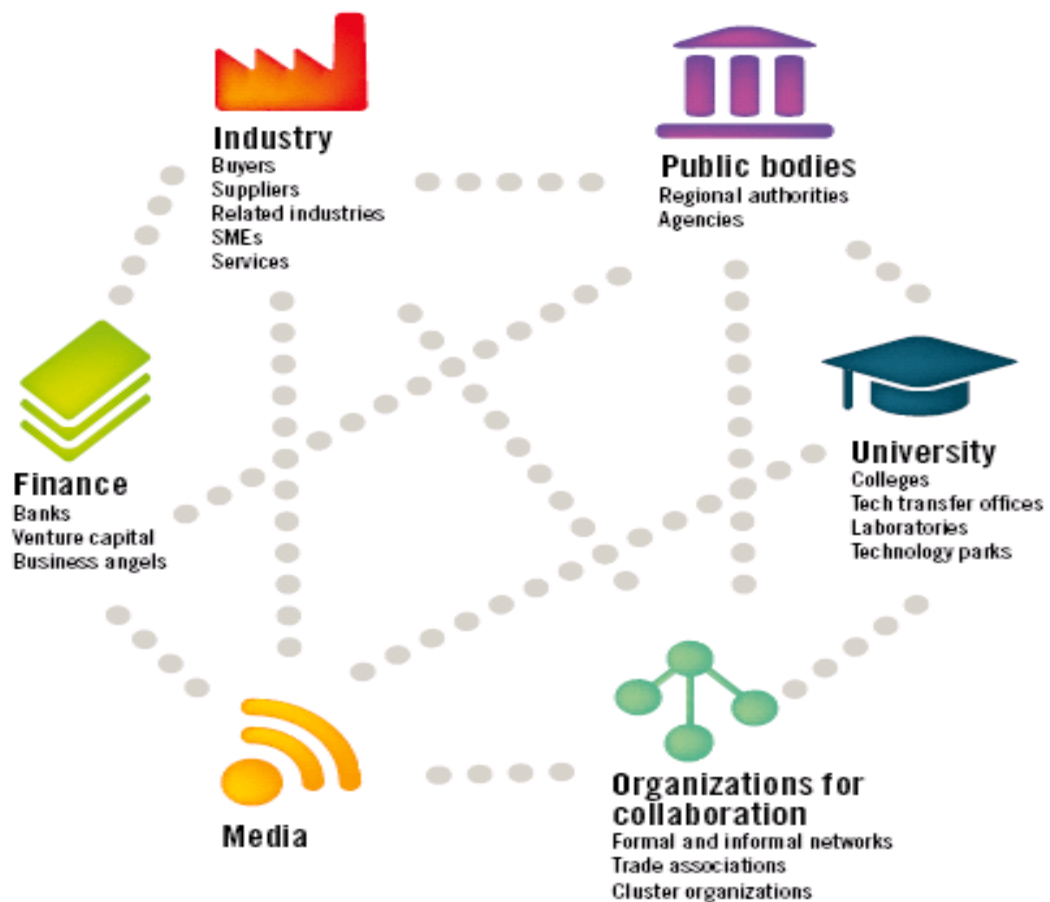
Porter (1998) alludes that clusters play a vital role in a company's ability to continually innovate. Companies inside a cluster have a better window of interaction with sophisticated customers than isolated companies. Because sophisticated customers are part of a cluster, companies are fast to switch to their needs and trends. Clusters don't just offer opportunities for innovation but also provide the capability and flexibility to act swiftly. In the event of new innovations, companies within a cluster have lower costs of experimentation before such innovations pan out. Clusters also provide competitive peer pressure and constant comparison thus making companies to remain centers of innovation.

Clusters do not exist in isolation or as fixed flows of goods and services but are dynamic and include a strong exchange of information, and skills etc. Many types of

firms and institutions form part of the knowledge externalities to clusters. The main players in this category according to Solvell (2009, 15), include; firms, financial actors, public actors, universities, organizations for collaboration and media as illustrated in the figure 8 below.

Figure 8 Actors in the cluster

(Source: Sölvell 2009, 16)



These actors play various roles in the cluster development. For instance; the media create stories around the cluster that build a regional brand. Academic actors including universities and colleges promote R & D and transfer of skills.

3.2 Competitiveness

Competitiveness, according to the World Economic Forum (2014) refers to a collection of bodies, programs and aspects that influence the productivity of a country. The intensity of efficiency impacts on the essential drivers of development. It determines the rate of return achieved by investments as well as set the level of wealth that can be achieved by an economy. While a country's productivity determines its ability to sustain high levels of income, it is also one of the key factors that determine ROI. ROI is a principal factor in rationalizing an economy's growth potential.

Competitiveness may mean different things to different groups/sectors (Porter 1998). To firms, competitiveness may refer to the ability to compete in world markets with a global strategy, to a state (government); it is when a nation has a positive balance of trade, to economists; it may denote a low unit cost of labor adjusted for exchange rates.

Competitiveness is fundamentally about thrashing competitors in acquiring orders and obtaining them with better conditions that your enterprise generates a surplus. The company or organization must deliver quality, speed and flexibility, minimize costs and be reliable. These competences are created by suitable innovation strategies, constant upgrades, and good choice of location, tangible and intangible assets (CBS competitiveness platform 2014)

The manner of competition and foundations of competitive advantage vary extensively among industries and industry sectors. Factors such as globalization, technological leads, economies of scale and differentiation are vital when attempting to examine an industry's (or economy's) competitiveness. In international competition, firms gain competitive advantage through changing the basis of

competition. They achieve and sustain it through improvement, innovation and upgrading. Improvements and innovations must be fast enough to stay ahead of international rivals. (Porter 1998, 70)

Porter (1998, 34) attests that firms define their own approach to compete in profitable and sustainable industries by developing competitive strategies. Two key elements that stimulate competitive strategies are; industry structure and positioning within an industry. Although industries vary in the type of competition and profitability, none of these two elements is adequate by itself, to influence the selection of strategy. Both elements are dynamic and can be shaped by firms which may respond to the environment or try to influence it in their favor. The competitive strategy must emanate from an understanding of industry structure and dynamics. . Industry structure is essential for competition for a number of reasons; it creates differing prerequisites for success in different industries. Structurally attractive industries are often those with a high standard of living. They have persistent entry barriers thus; they earn more attractive returns to capital.

Porter (2012, 10) explains that a nation's prosperity is either inherited or created. Inherited prosperity is derived from natural resources and endowments. This type of prosperity, he adds, is limited and the government becomes a central player in dividing the pie. This often leads to corruption and counterproductive policies. Created prosperity is unlimited and arises from enhanced productivity in goods and services. In this category, companies are the main actors who work to expand the pie whereas the government creates an enabling environment. Competitiveness is achieved from raising the total factor productivity and utilization. Labor productivity growth has a direct correlation to GDP growth.

According to World Economic Forum (2014, 4), Competitiveness and degree of productivity of a nation is determined by several factors. Productivity is a key factor that is used to explain a country's growth potential through focus on the rate of

return on investments. High ROI is a major driver of national economic prosperity. National competitiveness and growth depends on many factors which are not mutually inclusive i.e. their importance is realized when two or more are present. These factors include; institutions, infrastructure, micro-economic environment, relevant basic and higher education, training, effectiveness of commodity market, capital resources market development, effectiveness of the labor market, technology development, growth of the market size, inventions and improvement of business processes, developed health care systems etc..

The role of private and public institutions in national competitiveness is vital. The legal framework under which industries and businesses operate is created by institutions. Investment decisions, production organization and distribution of benefits are dependent on these legal frameworks. The government attitude towards industry operations, management of public funds, levels of bureaucracy, protection of intellectual property rights, etc. influences investor decisions and subsequently affects growth (ibid.,6).

A well-developed infrastructure (transport and communications) on the other hand promotes to the effective functioning of the economy by reducing the effect of distance between regions, integration and connection of local industries with other markets at low cost. Effective modes of transport; railways, road, air facilitate ease of movement of goods and services. Reliable electricity supply, extensive communication networks allow for smooth production and free flow of information subsequently raising the overall economic efficiency. As earlier noted that these factors are mutually inclusive, the microeconomic environment too plays a significant role. Firms operate efficiently where inflation rates are reasonable and public funds are well managed (ibid.,6).

Health and education are vital components for a country's competitiveness, economic development and growth. Poor health does not only affect the efficiency

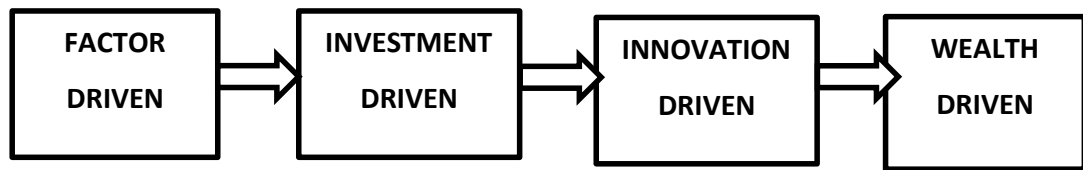
of workers but also cost businesses. Investment in provision of quality health and education is important for a country's economy. Both basic education and higher education and training increases efficiency and adaptability to more advanced to more advanced production processes. Similarly, goods market efficiency, labor market efficiency and financial market development are important in raising national competitiveness. Flexibility of the labor market ensures that workers are put in their most effective use to provide their best efforts. Market size and efficiency, healthy competition, reasonable tax policies, equitable allocation of resources, availability of capital for investment all contribute to economic growth and overall national competitiveness. Large markets and globalization allow for exploitation of economies of scale as firms can lay their focus on local and international markets (ibid.,8).

Technology and innovation are at the core of productivity development. Innovation, apart from changing the way things are done, also opens an extensive range of possibilities in production of goods and services. Conducive environments for innovation activities in countries that have reached the innovation stage of development allow for industries to maintain high competitive edge and change towards higher value added activities. Similarly, the quality of cluster interaction heightens efficiency, creates more opportunities for innovation and leads to development of sophisticated business processes within a country (ibid.,8).

Porter (1998, 545) attests that national economies show a number of stages of competitive development. These stages are reflective of the level of cluster development and sources of advantage a nation's firm has in the international competition. They include; factor driven, investment driven, innovation driven and wealth driven as illustrated in the figure 9 below.

Figure 9 The four stages of national competitive development

(Source: Porter 1998, 546)



Internationally successful industries from nations in the factor driven category draw their advantages mainly from basic factors of production. Having only this source of competitive advantage, limits the range of industry segments that a nation's firms can successfully compete in international market. These nations seek technology from other nations and firms compete mostly on the basis of price. This stage puts a nation's economy in a disadvantage as it becomes sensitive to world economic cycles and vulnerable to the loss of factor advantages to other nations (ibid., 547)

Investment driven stage is characterized by a willingness and ability of firms and nations to aggressively invest in modern, efficient and large scale facilities and acquisition of best technologies. The range of industries in which a nation's firms can compete is wider compared to the factor driven stage. These nations not only acquire sophisticated process technologies but also obtain licenses or enter into joint ventures to produce and improve upon complex foreign products. A mastery of foreign technologies facilitates development and refinement of their own product models. In this stage, competitive advantage is realized by improving factor conditions, firm strategy and structure. The economy of nations in this stage is less vulnerable to world economic cycles (ibid., 549)

In innovation-driven stage; the full diamond (see 3.3) is visible in a broad scale of industries. A nation's firms can successfully compete in a wide variety of industries and clusters exhibit a nation's specific environment and history. This stage is

characterized by high levels of education, rising personal incomes, emergence of world class supporting industries, sophisticated demand, a desire for convenience and stimulation of domestic rivalry. Educational institutions and research facilities are sophisticated and are continuously upgraded. In this stage, more advanced firms create sophisticated service needs e.g. Marketing, engineering and testing. Subsequently, those firms that offer the services may be pulled abroad to offer similar services to growing manufacturing firms (Porter 1998, 554)

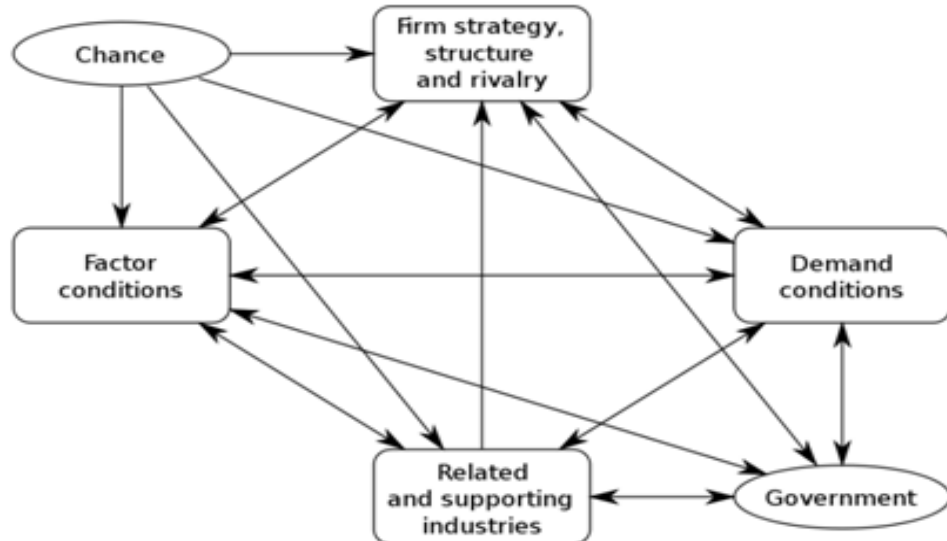
The final stage of competitive development is the wealth – driven stage. This stage entails a move to a more sophisticated competitive advantage and an increased range of industries in which firms can successfully compete. The disadvantage is that this is the stage that leads to ultimate decline because the economy is driven on wealth that has already been created. Firms begin to lose competitive advantage; the motivation to invest begins to wane, trust in competition falls, compulsion to innovate diminishes, educational standards fall as stake holders no longer pay attention etc. such nations become less attractive for investors due to their weakening desire to innovate. This stage experiences rising levels of un-employment or loss of jobs due to down- sizing and inadequate range of industries for firms to invest (ibid., 559)

3.3 Porter's Diamond Model

In an attempt to understand why some nations achieve competitive advantage in particular industries, Porter (1998) centers the answer in four broad elements; Factor conditions, Demand conditions, Related and supporting industries and Firm strategy and rivalry. This model (a.k.a the diamond model) has been expanded by other scholars to include other elements like Government and chance as illustrated in figure 10 below.

Figure 10 Porter's Diamond Model

(Source: Porter 1998, 127)



Michael Porter's Diamond Model for the competitive advantage of nations advances a model that can help comprehend the comparative position of a nation in global competition. The model can also be used for major geographic regions. The diamond model identifies multiple dimensions of microeconomic competitiveness of nations, states, or other locations, and understands how they interact. The location can improve competitiveness by identifying and improving the elements in the diamond that are posing as obstacles to productivity (Bulcke et al, 2009).

The determinants independently and as a system create a context under which firms emerge and competition thrives. The diamond is a jointly reinforcing system where the effect of one determinant is dependent on the situation of others. Firms gain competitive advantage where the home base permits and supports a quick accumulation of specialized assets and skills, where the goals of the managers and investors support extreme commitment and sustained investment. If the home environment is most challenging and dynamic, some firms are likely to fail while

others will emerge and flourish in the international competition. This is due to the differences in possession and exploitation of skills and resources. (Porter 1998, 72)

3.3.1 Factor Conditions

This essentially refers to the inputs necessary to compete in any industry and they involve factors of production: land, labor, capital, natural resources and infrastructure. These factors can either be inherited or created within nations through various processes. The factors most critical to productivity across the industries are not inherited but created. Therefore, the availability of factors in a nation during a certain period is not as important as the degree in which such factors are formed, improved and made more specialized to particular industries (Porter 1998, 74).

He adds that in other scenarios, an abundance of factors may undermine rather than boost competitive advantages. Similarly, whereas a shortage of labor force may be seen as a disadvantage, a nation may achieve competitive advantages through influencing strategy and innovation. Companies may focus on automation and the minimization of defects.

The factors can be grouped into a number of categories such as; human resources which entails the quantity, quality and cost of personnel with special attention to working hours, work ethics etc. Human resources can be categorized into different fields as those concerning engineers, programmers, doctors etc. Human resources, knowledge and capital factors can be flexible among nations. Factor availability in a nation may not be an advantage if the factors become obsolete.

Physical resources refer to mineral deposits, water, land, timber deposits, power sources, fishing grounds, climatic conditions etc. The Availability, accessibility, quality

and size/amount of these resources matter a lot. In other cases, the location of these resources relative to other nations is an important factor.

Knowledge resources involve a nation's stock of scientific and other knowledge resources. The Advanced factors are the most significant ones to competition. Institutions that create advanced factors e.g. educational institutions require sophisticated human resources and technology. A nation's knowledge resources exist in universities, research institutes, statistical agencies, business literature etc.

Capital resources include the capital available to the finance industry e.g. debt, bonds, equity, and venture capital. These resources will be affected by the structure of the national capital markets.

Infrastructure entails aspects such as transportation system, communication system, payments and funds transfer, health care as well as institutions that affect the quality of life and attractiveness of a nation as a place where to work. Competition will be greatly affected by the type and quality of infrastructure.

3.3.2 Demand Conditions

The home demand plays a vital role in raising competitive advantage of industries. Home market gives early clear signs of their needs, and exerts pressure to local firms to innovate faster and attain more sophisticated competitive advantages compared to foreign rivals. According to Porter (1998), one of the main advantages in dealing with home buyers, is clarity and ease of communication. Proximity and cultural similarity makes it easier for firms to perceive, understand and act upon buyer's needs.

Another important consideration about home demand is their nature. If the buyers

are the most sophisticated and demanding, then a nation's firm's competitive advantage rises. Similarly, if home buyers anticipate foreign needs, it sends a warning signal to local firms about buyer's changing needs. A large home demand may be both an advantage and disadvantage. A large home market can lead to competitive advantage as firms invest aggressively in large scale facilities, technology development and productivity improvements. On the other hand, it may hamper development of global firms if it is not for segments that are demanded in other nations (Porter, 1998, 92).

The effect of demand conditions on competitive advantage also depends on other elements of the 'diamond'. A large home market may induce contentment in situations where domestic rivalry is weak.

3.3.3 Related and Supporting Industries

The presence of related industries that are internationally competitive is very significant. For instance, internationally competitive supplier industries create advantages in downstream industries by supplying cost-effective inputs, efficiently and rapidly. Firms, due to their close working relationships with suppliers, gain fast access to information, new ideas and supplier innovations. They also influence suppliers' process of innovation and upgrading as well as serving as test sites for development work. Transaction costs are considerably low where supplier and firm work together i.e. sharing technology development, distribution, manufacturing, marketing and other services (Porter 1998).

3.3.4 Firm Strategy, Structure and Rivalry

This determinant looks at the context in which firms in an industry are created, their structure and the nature of domestic rivalry. Porter (1998) explains that the national circumstances determine how firms are organized and managed. While no single

nation exhibits homogeneity in management practices across firms, the national context creates trends strong enough to be spotted by an observer. Differences in management practices and organizational skills create advantages and disadvantages among industries. Many aspects of a nation impact the ways in which firms are managed and organized. Aspects such as attitude toward authority, norms of interpersonal interaction, individualistic or group conduct, attitude of employees towards management, social standards and professional values greatly affect firm management. For instance, Italy's small-sized firms and family ownership suggest, among other things, a high degree of individualism and suspicion of authority unless coming from the family or extended family (Porter 1998, 109). Attitude to learn new languages and to travel are factors that will influence a firm's willingness to go global.

The role of national prestige/priority on goals has a great effect on the motivation of the human resources attracted to particular industries. Competitive advantage often results where an industry becomes a notable occupation or takes national importance. Success will greatly depend on the type of education a nation chooses to offer. Training the most promising young people in science and engineering is beneficial to an economy because it provides an incentive to innovation. Nations tend to be competitive in activities that are admired and depended upon or where heroes come from (Porter 1998, 115)

According to Porter (1998), domestic rivalry leads to innovation and improvement by creating pressure on firms. A group of domestic rivals create alternative approaches to strategy and create many products and services to cover many segments and also reap economies of scale by selling abroad. Vigorous domestic rivalry leads to formation of a competitive advantage in an industry as well as raising the scale of the entire national industry. Other advantages accruing from domestic rivalry include; higher quality of services and goods, lower prices, new processes, raising the stock of knowledge and skill etc.

Porter (1998) discloses that rivalry among domestic firms sometimes goes beyond the purely economic and can become emotional/ personal. They fight not only for

market but for people and technical innovations. It is argued that this form of competition leads to duplication of efforts and prevents from gaining economies of scale. The solution he proposes for domestic firms is to nurture one or two firms who become 'national champions' with the scale and strength to compete globally or alternatively to promote inter firm cooperation.

3.3.5 The Role of Chance

Chance events are events beyond the control of firms (and often governments), that have the potential to create discontinuities such that, advantages of previously established competitors are reversed and opportunities created for new entrants. Examples of these events include; fluctuation of regional and world demand, wars and conflicts, political choices (and actions) by external governments, acts of pure invention, significant shifts in world financial markets etc. Chance events play their role by altering conditions in the diamond model for example, wars can create an urgency of local scientific investments (factor creation) and disrupt customer relations (demand conditions). While chance events allow for shifts in competitive advantage in an industry, national traits play an important role in what nation exploits them. Nations that feel the effect of a chance first or most severely may move early to deal with it (Porter 1998, 125)

Invention and entrepreneurship are vital for national advantage. Porter (1998) asserts that determinants play a major role in locating where inventions and entrepreneurships are likely to occur in a particular industry. Nations with favorable 'diamond' have the ability to convert an invention into an internationally competitive industry.

3.3.6 The Role of Government

The government plays an important role to influence the four determinants for

competitive advantage. Both the determinants and the governments influence each other positively or negatively. The government may enforce subsidies and policies, which impact on the demand conditions. They are also major buyers in many nations e.g. defense goods, telecommunication equipment, aircrafts for the national carrier etc. They also shape the circumstances of related and supporting industries by measures such as media control of advertising, taxation policies, regulation of supporting services, etc. Even though the government appears to have an important role on national competitive advantage, its role is inevitably partial. It can raise the odds of gaining competitive advantage but it lacks the power to create itself. Therefore, the role of the government should be to enforce good policies where underlying determinants of national advantage are present (Porter 1998).

3.4 SWOT Analysis

The SWOT analysis, developed in the 1960's, is a process of analyzing an organization's internal capabilities and external market needs. The complexity and diversity of the environmental forces must be accurately considered in order to assess a company's strengths and weaknesses. The environmental influences which affect a company, industry, business community, city, or country are technological, economic, social and political in nature. Learned et al (1965, 170)

Learned et al (1965) declare that environmental developments destroy or create opportunities for industries, and thus adequate intelligent planning is essential. He maintains that the identification of a new opportunity or an imminent threat depends upon knowing which information is of relevance. The awareness of the environment is an on-going requirement for informed choice of purposes; it is not an activity to be carried out only when there is a looming threat.

According to the Joint Research Centre (2007), the process is an important tool for a strategic planning process and the measurement of competitiveness. It involves matching firms' (or industries') resources and competences with the competitive atmosphere in which they operate. The process entails the collection of information

regarding the internal and external factors that have an influence on the performance of a single firm or a whole industry.

An analysis of the external environment requires the consideration of different factors. The external factors can be either threats or opportunities. Threats may involve government actions, actions by other competitors, inflation, technological changes, etc. These factors range from social, economic, political, demographic, and technological and market competition. Opportunities include trends such as technological change, government policies related to the industry, changes in social patterns, lifestyle etc. An analysis of threats will entail obstacles faced by the industry, what other competitors are doing, and the changing technology that may threaten the industry (Wehrich, 2010)

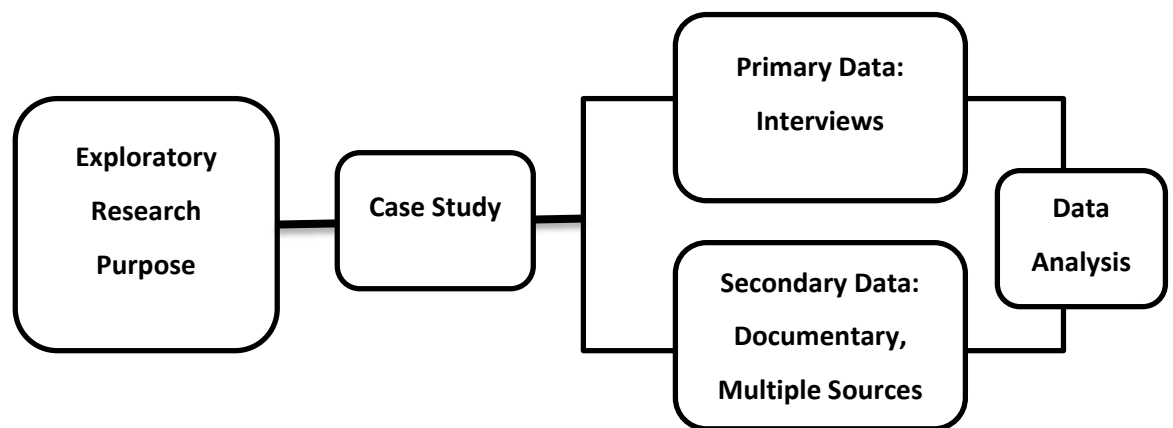
The internal environment comprises weaknesses and strengths. The consideration of strengths addresses factors such as the advantages a firm has, what it does well, the accessible resources etc. The Identification of weaknesses focuses on what a firm does badly, what it can improve and what it should avoid (Joint Research Centre, 2007).

4 METHODOLOGY

4.1 Research Design and Strategy

The aim of this thesis is to find the right answers of drawn up research questions and objectives (see chapter 1.2). The research design is an inclusive draft of how our research will take place, how research data is going to be collected, what and how research tools will be used and the authors' intended means for evaluating and analyzing the data collected. The research purpose and the research method's literature can be exploratory, explanatory and descriptive (Saunders, 2009, 139). Authors' thesis research design is visually shown by figure 11 below.

Figure 11 Thesis Research Design



The exploratory research often used for the problem or phenomena that is not well defined and sometime it get difficult to build a connection between problems and relationships. According to Harvard research methods, exploratory research might include conducting interviews of focus group or a literature search. To identify the key issues and key variables is the one of the main objectives of exploratory research (Harvard). If the researcher is unclear about the detailed nature of the research problem and need to find the right answer for understanding the problem then exploratory research is recommended by Saunders et all (209, 139).

One of the main purposes of this study is to get deeper knowledge about the Finnish mobile gaming cluster. For this study, the authors found exploratory research to be most appropriate. It is estimated that new phases of knowledge and ideas will be exposed as a result of the study.

The research method used was case study. The case study research method is an experiential enquiry that examines a modern occurrence in its real-life context applying numerous bases of verification; when the limitations between phenomenon and content are not clearly evident (Yin, 1984, 23). The case is the rise of the Finnish mobile gaming cluster. This research method was chosen by the authors because they desired to increase the knowledge and understanding regarding research questions and objectives. Case study typically attempts to answer questions which start with "how" or "why", advises researcher Robert K. Yin (2009, 13) He adds that these questions involve an existing set that permits minor manipulation by the investigator(s). The authors' research plan was constructed upon the nature of the research questions and the research objectives.

4.2 Data Collection

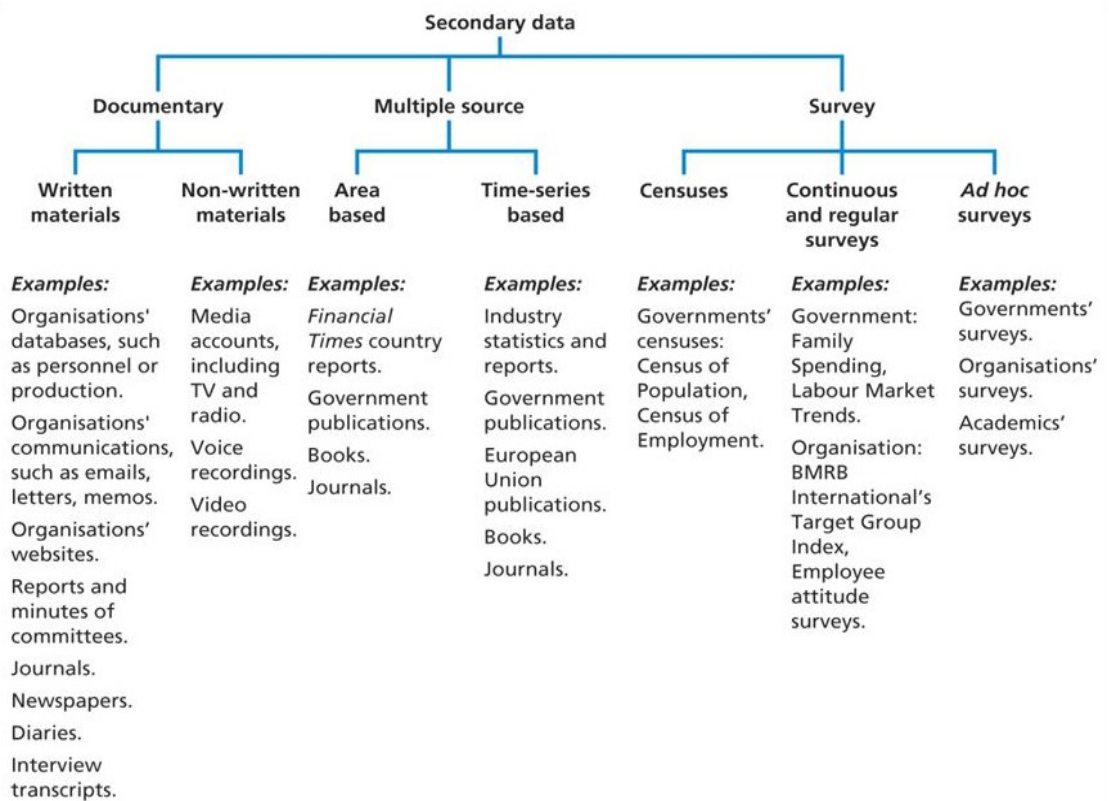
The data collection methods were derived from the research strategy. The authors chose case study as research strategy. Yin (1994) indicated six sources from where the case study approach data can be collected. These include; personal observations, recorded data, archived data, tangible objects, involvement of researcher. To implement the research, the authors applied secondary data collection and interviews. The data identified as primary data and secondary data.

4.2.1 Secondary Data

The authors have collected secondary data from different sources for this study. Secondary data is the data used for research purpose which has been originally

collected for some other purpose (Saunders, 2009). Secondary data can be categorized into 3 types. They are documentary data, multiple source data and survey based data (Saunders, 2009, 258). Again secondary data expects different data sources to be validated and be persistent in their analysis of secondary data. (Briks, 2013, 61). Birks, Malhotra and Wills (2013, 64) also mentioned that secondary data sources can be classified as either internal or external. Internal data is the data which is available within the organization. A researcher can gather internal data from the daily activities and transactions of origination that involves journal records, statements, inventory records, results from marketing researches etc. (Education Portal). In the research, the authors did not gather internal data from the organizations. The authors gathered internal data from few companies in the Finnish mobile gaming cluster.

Figure 12 Types of Secondary Data
(Source: Saunders, et.al 2009, 259)



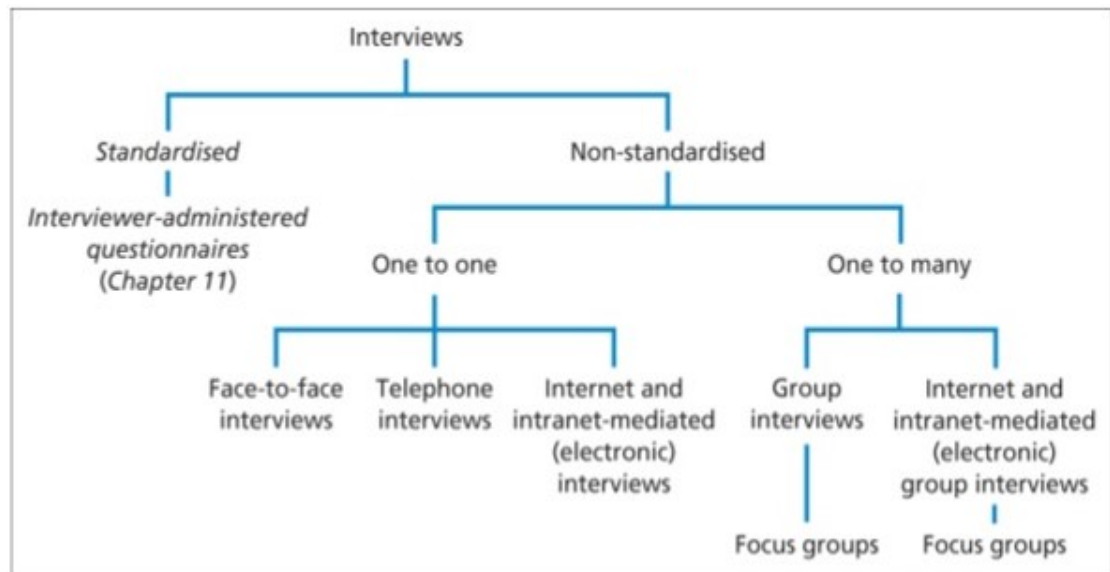
External secondary data are the main data sources for this thesis. External secondary data can be derived from Government sources, company records such as trade reports, annual reports, print media publications and broadcasts, learning institutions, commercial information etc. (Education Portal). Here authors collected external secondary data from trade, business and professional associations, internet, broadcasting media and print media. However, getting sufficient data on Finnish mobile gaming cluster was somewhat challenging for the researchers. The authors collected data based upon the theoretical framework (Porter's diamond model and SWOT analysis). For that they extensively benefitted from secondary data sources like government reports, market statistics, economic surveys and a host of other sources from the internet.

4.2.2 Primary Data

Saunders (2003, 89) defined primary data as data that were formerly unfamiliar and which have been gathered directly by the researcher for a particular research project. The primary data for this study were collected through the interviews which according to Kahn & Cannell (1957) are focused discussions between two or more people. Moreover interviews can be categorized in relation to the level of formality and structure. Saunders (2009, 320) categorized interviews into three classes. He explains that they may be structured (standardized) where all interviewees are offered the same set of questions, unstructured where questions may vary and semi structured which combines the two. Structured interviews are mostly quantitative in nature. (Healey and Rawlinson 1994).

Figure 13 the Forms of Interview

(Source: Saunders, 2009, 321)



Standardized interview seen as an interviewer-administered questionnaire. In standardized the interviewer needs to read out each question and record the response of the interviewee on a standardized schedule. Again on the other hand list of themes and questions involve in non-standardized interviews. In non-standardized interview some question can be added and questions order can be varied from interview to interview depend on the conversation during the interviews. Usually the whole conversation gets recorded and perhaps notes taking (Saunders, 2009, 320).

In order to reach the research goal and get more insight about the Finnish mobile gaming cluster, the authors conducted non-standardized interviews. They conducted both face-to-face interviews and email interviews. The questions of the interviews were developed based on the literature review and the theme. The theme provided guidelines for the discussion flow between the authors and the participants. There were seven different questions utilized in the interviews in order to encourage the participants to share their personal views and knowledge in exploring research problems. The authors tried to cover maximum aspects of the Finnish mobile gaming cluster. In doing so, they interviewed mobile game company entrepreneur, game

developers, CEO, regional gaming cluster chairman, national gaming association member and finally a teacher from an educational institution. All these helped the authors to get ideas about the whole mobile gaming cluster in Finland.

The following table 3 introduces the interviewees.

Table 3 List of the Research Participants

Name of the Organization	Type of the Organization	Position
EXPA	Jyväskylä Game Industry Hub	Chairman
ZAIBATSU INTERACTIVE INC	Mobile Games	CEO & Co-Founder
KINAHMI GAMES	PC & Tab games	CEO
NEOGAMES	Finnish Game Industry Hub	Assistant office manager
TOUCH FOO	Independent game studio	CEO & Game Developer
PISAMALA	Mobile Games	CEO
SIEIDI OY	Mobile games	CEO & Co-Founder
DÉCRON STUDIOS LTD	Privately held game company	CEO
JYVASKYLA UNIVERSITY OF APPLIED SCIENCES	Educational Institute	Principal Lecturer, School of Technology

4.3 Data Analysis

The primary data for this research was collected through non-standardized interviews. The data that were collected from non-standardized interviews can be classified as qualitative data; also described as non-numeric data. This kind of data cannot be quantified. To gain a clear understanding, the information needed has to be analyzed (Saunders, 2009, 480). Qualitative research is used to analyze focus group and in-depth interviews, unstructured data, open ended survey responses, literature reviews, interviews, video, pictures and audio recordings etc. It is proposed that a deductive approach should be used where a researcher wants to form research objectives and use a framework to organize the data analysis about an existing theory (Saunders, 2009, 489). Here authors' applied a deductive approach to analyze the data, because their interviews were formulated from existing theories.

Again the theoretical propositions can be used as a means to support researchers to organize and direct the data analysis (Yin, 2003).

The authors conducted 5 interviews via email and 4 face-to-face interviews. All face-to-face interviews were recorded with the permission of the interviewees. Results from Email interviews were easier to analyze as they already were in a written form. The process for analyzing qualitative data is quite elaborate. The first step involves transcription of interview responses into text for easier analysis. According to Saunders (2009, 492) the process involves the summary of main points, arising from the transcript of the interviews. The process of summarizing data helped the authors to understand the main theme of the results. Categorizing data is the important part of the data analysis process. Saunders (2009, 492) stated that categorizing data involves two activities; they are developing categories and attaching research categories to meaningful portions of data. Data categorizing helps the researcher to identify and comprehend the connection amongst the units of data. This enables development and testing. (ibid, 492).

In order to find the answers of research questions and reach the research objectives the authors developed the categories based upon a theoretical framework. In doing so, they prioritized on those sections of information that were common in all interviews. They figured new categories based on those common answers from interviewees. In order to organize and structure the transcribed data, the relevant portions of the data were attached to suitable categories. Meaningful answers and conclusions for the study were drawn from finding relations between the categories of data.

4.4 Research Ethics

The ethical principles cannot be neglected during the data collection process. Generally ethics are defined as moral or responsible attitudes that guide moral choices about our attitude or behavior and our relationships with others (Cooper and

Schindler, 2006, 116). Saunders (2009, 184) state that research ethics relates to apply a norms and standard of attitudes on research planning, proposal, formation of research questions, access gaining, research design, data collection, processing, sorting and analysis data and writing report on findings.

Throughout the research process, the authors have been concerned about the principles of research ethics. There are key objectives in research ethics: broadcasting objectives to protect the human participants, protection of privacy and the process of informed consent, avoidance of any harm, pain and discomfort during the process of data collection. The interviewees were fully concerned and informed about the purpose of the study. They were also told that they had the right to refuse to participate. The authors respected the participants' reactions and opinions and avoided harm, pain and discomfort during the process of data collection through the interviews. In some cases, the interview questions were sent before the actual interviews on the request of the participants. No detailed personal information of the participants will be revealed.

4.5 Verifications of the Results

Verifications of the results are crucial step that cannot be neglected. The authors used four different criteria that incorporate the same content but have different names form different researchers (see Table 4).

Table 4 the Criteria to Verifications of the Study

(Source: Akpinar 2009, 81)

Criteria	LeComtr and Goetz (1982)	Lincon and Guba (1985)	Yin (2003); Rowley (2002)	Meaning
1	Internal validity	Credibility	Internal validity	Sense making of finding
2	External validity	Transferability	External validity	Ability to generalize
3	Reliability	Dependability	Reliability	Ability to replicate
4	Objectivity	Conformability	Construct validity	Ability to get acceptance

Internal validity or credibility assesses whether the findings for the research make sense or answers the research questions (Akpinar, 2009, 81). The authors' utilized case study as the research method and that gave authors good amount of data from reliable sources. This was suitable to resolve the research questions. Case study methods have constantly encountered the challenge of transferability and external validity because of the lack of generalizability. External validity pursues the quality to generalize the findings (ibid).

Reliability or dependability refers to the range to which the data collection methods will generate consistent findings (ibid, 82). The authors were concerned about the reliability or dependability and carefully evaluated the research findings from the angle of reliability. All historical data have been collected from competent and trustworthy websites. The authors retrieved historical data of Finnish gaming cluster from Neogames' (Hub of Finnish Game Industry) online publications and other historical data collected from Economy watch, UNdata, Trading economics, World Bank data, Statistics Finland and among other reliable sources. Regarding to the interview findings, Saunders (2009, 156) emphasized that the possible treat may be vulnerable to subjectivity or participant bias. Participant bias can be explained as an unwillingness of the respondents to give the appropriate information. But in our case, the interviewees appreciated us for taking this challenging topic as our thesis and helped us all the way with right information.

Objectivity or conformability refers to whether other researchers can also attain the same outcome from the same sets of data (Akpinar, 2009, 82). The authors believe that, the objectivity of this research has been taken under consideration. This research is comparatively fresh and objectivity understood the emergence of mobile gaming cluster in Finland and the factors behind the success of the industry.

5 RESULTS

The results part consists of two general parts. The first segment deals with the competitiveness of the Finnish gaming cluster based on Porter's diamond model. In second part; the strengths, weaknesses, opportunities, and threats of the Finnish mobile gaming cluster will be analyzed by using the SWOT analysis tool.

5.1 Competitiveness of the Finnish Mobile Gaming Cluster based on Porter's Diamond Model

5.1.1 Factor conditions

Finland's contribution clearly plays an important role in raising the competitiveness of the mobile game cluster. Finland has invested its fair share of resources to create this competitiveness. These factors are discussed below in the categories of knowledge resources, physical resources, capital resources and human resources.

Finnish schools have integrated the use of ICT and especially mobile devices in learning processes. Children are introduced to mobile gaming education from tender ages. Mobile devices are considered to support learning in a number of ways and have become part of the children's daily experience. The University of Jyväskylä is partnering with companies and users to develop mobile learning that centers on supporting the well-being of children and young people. In one of the tested applications, fifth graders were rewarded with a new mobile game every time they completed their tasks on life management skills.

"The aim of introducing mobile devices to children is to promote the 21st century skills such as learning and development of collaborative problem solving, communication, ICT expertise and creativity "(Kivimäki, 2013)

In total, 17 educational institutions including Universities, vocational schools and universities of applied sciences provide education in the fields of gaming. For instance, comprehensive studies in the gaming fields are offered by the Aalto University, the Universities of Tampere and Helsinki, Jyvaskyla University of Applied Sciences etc. Every year, around 300 students are admitted to study in game related programmes. (Tekes, 2014). The mobile game industry is growing as educated and skilled workers continue to join it. The government and private organizations such as Tekes, Skene, IGDA, and Neogames sponsor R&D initiatives leading to new innovations as well as promoting the stock of knowledge in the gaming field.

Finland possesses excellent technological know-how on mobile platforms. This may be attributed to Nokia. Some of the skills that ended up into mobile game developing were originally created at Nokia. Microsoft's purchase of Nokia influenced the establishment of more and more game developing studios (Gaudiosi, 2014). According to Neogames (2014), the Finnish games sector has roughly 2500 employees.

5.1.2 Demand Conditions

The demand for mobile games in Finland is rapidly growing. This growth may be attributed to the high mobile penetration rate in Finland. The story of mobile phones dates back to mid-90s when Finland became the world's number one in mobile phone penetration. Nokia; a Finnish company was big in size and became world's biggest mobile phone manufacturer in 1998. The first mobile game, *snake* was a creation of Nokia in 1997. The game has since been embedded in 400 million devices thus making it the most played in the world (Willans, 2013).

According to Mobithinking (2014), digital gaming in Finland is as popular as in the U.S where it is estimated that 67% of the population are video game players.

Nevertheless, Finnish players tend to use their mobile devices more for these games. Similarly, Finland has the highest mobile access rate in the world at 1.8 devices per person. The new found popularity and demand for mobile games may also be attributed to technology development. Most Finnish consumers have smartphones and tablets which they use not only for social purposes but also for gaming and entertainment.

Children are taught to play with mobile devices and smart phones at a tender age in Finland. This integration of technology and use of mobile devices in education builds a strong demand for mobile games among the children who continue to play during their later lives. The general Finnish population is technology savvy too, an inspiration from Nokia and the high level of education (Lapintie, 2013). The success of Rovio's angry birds in 2012 saw more and more Finnish entrepreneurs joining the cluster. More Finnish consumers have been lured into the mobile game world hence raising the demand considerably.

It is important to mention that the ease with which the mobile games reach the consumers has also played an important role to raise demand. The spread of digital distribution stores has offered a very easy access to mobile games. Consumers can now download the games on their phones through numerous App Stores.

5.1.3 Related and Supporting Industries

A nation's competitiveness is determined by the availability of supplier industries, or those related to the industry in question. An analysis of the Finnish mobile game cluster reveals a number of players that are associated with it. Some of these players are not industries themselves but they play quite a big role. The music industry for instance supports the mobile gaming cluster by developing music and soundtracks.

The music behind the popular *angry birds* mobile game was composed by Ari Pulkkinen who's the most listened-to Finnish music composer.

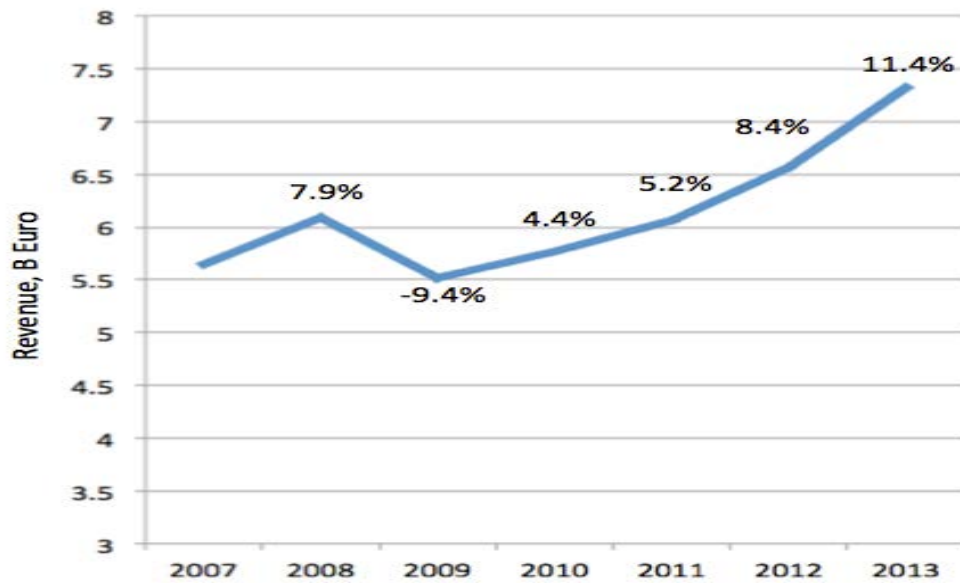
Other key players in the games cluster are the educational institutions. Finland is known for its high level of education, each year, about 300 students graduate to join the gaming cluster. Mobile phone manufacturers represent a vital position as far mobile gaming cluster is concerned. The mobile game developers usually center their focus on the preferences of the manufacturers. Phone manufacturers look out for game applications that bring out the features of their phones. Manufacturing of mobile phones supports the sales of mobile games significantly.

Although a related and supporting industry of virtually any type of venture, distribution and exports play a major role in terms of the numbers dictating economic activity in Finland. Approximately 90% of Finnish mobile and web based game products are sold outside of Finland. Examples of popular digital distribution platforms are App Store and Google Play. The app stores, Google play and other platforms aid in the distribution.

The game experience would not be the same without music. A record label called Aritunes is aiming to make games music the next big product to export. Most Finns do not know that the most listened-to Finnish composer in the world is called Ari Pulkkinen. Aritunes, his label, is behind the tunes of Angry Birds and Trine. Besides the music industry, other related and supporting industries are IT and telecommunications, web development, marketing, design, and graphics.

The Finnish software and IT services have grown over 11% in 2013 and the total revenue is close to € 7.5 billion. In 2008 the growth percentage was 7.9% but the percentage decreased by -9.4% in 2009 and the total revenue came down to € 5.5 billion. Since then the growth of the Finnish software and IT services are consistence (Software Industry Survey, 2014).

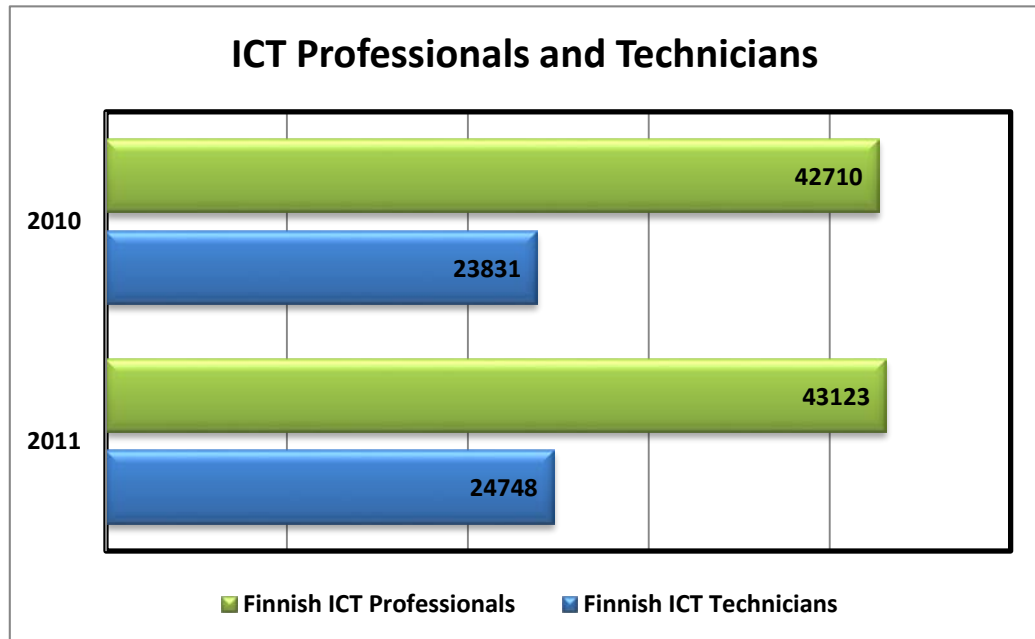
Figure 14 Growth of the Finnish Software and IT services Industry
(Source: Software Industry Survey, 2014)



According to Statistics Finland, in 2010 the total numbers of the Finnish ICT professionals and technicians were 43123 and 24748 respectively. Then in very next year 2011 ICT professionals and technicians increased by 1% and 3.8% correspondingly. ICT professionals and technicians with foreign origin were very small part of the total personnel.

Figure 15 Total numbers of ICT professionals and technicians in 2011

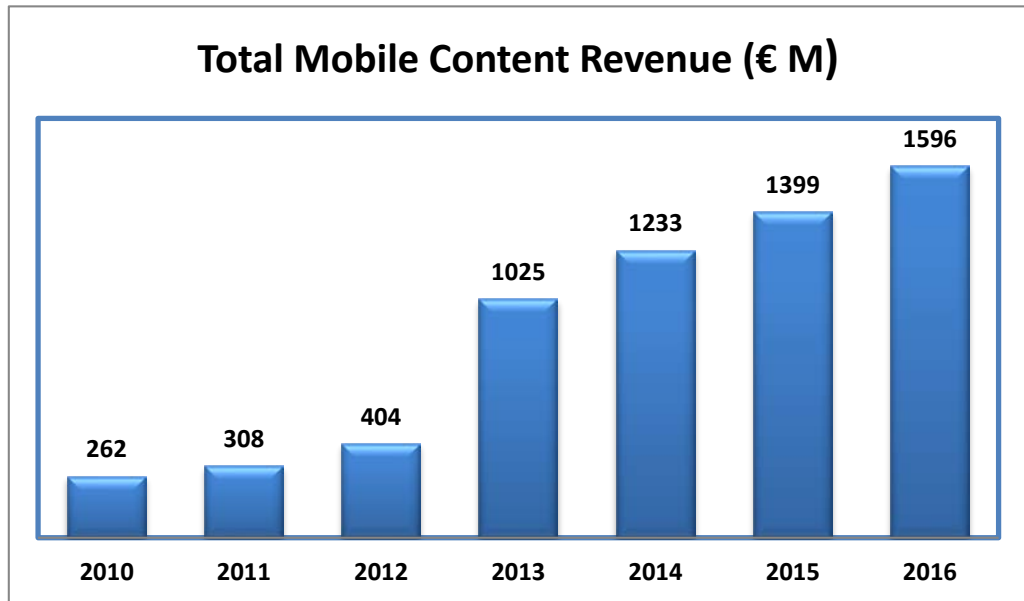
(Source: Statistics Finland)



The combined revenue from export and domestic market has been growing in the mobile content services market in Finland. In 2012 the total mobile content revenue was € 404million which represented a 31% growth from the previous year. The succeeding year (2013), the total mobile content revenue surpassed the one billion euros mark for first time and the amount was € 1025 million which was 154% upsurge from 2012. It is forecasted the growth will continue till 2016. The forecasted amounts are € 1233 million, € 1399 million, and € 1596 million for years 2014, 2015 and 2016 respectively.

Figure 16 Total Mobile content revenue in Finland (export & domestic)

(Source: Idean, 2013)



5.1.4 Firm Structure, Strategy and Rivalry

Generally it is expected that intense rivalries would lead to formation of competitive advantage in an industry and thus raise the entire national scale and performance. Other advantages include raising the stock of knowledge and skill, new processes, high quality goods and services, lower prices etc. Rivalry in the Finnish mobile gaming industry can be analyzed from two viewpoints; local and global viewpoints. Finland has more than 200 game developing companies most of whom develop mobile games Tekes (2014). According to the founders of Direlight Oy, a Jyvaskyla based mobile game developing company; home base does not have a great significance for a company operating in a virtual world. The domestic market for mobile games is really small, forcing developers to focus on the global market from the start. The global focus not only raises the standard but also enables the developers to achieve economies of scale. (Human Tech Center Magazine, Summer/Autumn 2013, 17)

This perspective of global mind set is evident in many start-ups and established companies. Some mobile developers have formed alliances around the world to better have a grasp of the foreign markets. Supercell, one of the leading Finnish mobile game developer has formed co operations with Staria, which has subsidiaries in Japan, Denmark, South Korea and the U.S to handle its global financial management, order management and purchasing among other services by use of NetSuite cloud service. This cooperation has subsequently boosted Supercell's global business operations. (Tommila, 2013) Supercell also has offices in the U.S. Its major investments in 2013 came from Japan's GungHo and Softbank. Rovio; Angry birds developer has set up offices in mainland China.

Finnish mobile game developers display competition relationship at developmental stages. Nonetheless, they are firmly bound together when facing competition from abroad. They are genuinely supportive of each other. When, in 2012, Rovio; the Angry birds developer gained global popularity, several people around the world were captivated and wanted to learn about Rovio's experiences. C.E.O's and directors of Supercell and Rovio often are the main speakers in nonprofit organizations e.g. Startup sauna, where they offer advice to small companies (Cailey, 2013). Finland's mobile game development community is a tightly-knit community. Competition amongst the developers is insignificant because they all work as a big family. Jonne; Expa chairman concurs;

"Here in Finland we don't compete against each other! All companies are connected in one way or another. We exercise openness, cooperate with and respect each other".

The International Game Developers Association (IGDA), Finnish chapter's aim and effort is to create a strong game developer's community with a cooperative spirit and enhance a gaming culture within Finland. IGDA strives to develop international recognition of Finnish game developers locally and globally. Every month, the

association brings together more than 400 professional game developers in meetings where they exchange and share best practices.

The location of competitors plays a vital role in innovation development. Competitors that are geographically concentrated in a single region or city facilitate faster innovation and thus raise the national industry. There are possibilities of imitation and improvement of good ideas by competitors. Mobility of skilled workers across the firms also leads to accumulation of the stock of knowledge. Helsinki is considered the global arena for the gaming industry as it offers a more collaborative environment for collective mutual learning on technology, business development and game design. The highest percentage of Finnish game developers; 37% are based in the Helsinki area (Tekes, 2014). The city boasts of high quality studios for building mobile games, thanks to Nokia. Most of these studios sprang up during Nokia's growth in the early 2000's, to provide specialized services to Nokia. Nokia's growth is regarded as a contributing factor to Rovio's establishment in 2003 (Gaudiosi, 2014). Every year, popular events by startups for startups; which attract global investors and introduce Finnish companies to the global arena take place in Helsinki. For instance, *Slush*, *Game jam*, *Demoskene* and *Assembly* are events that promote recognition of talents in gaming cluster as well as other fields.

5.1.5 The Role of Government and Chance

Chance refers to the events and occurrences that an industry or nation has no control over. They include acts of pure invention, wars, major technological discontinuities, political decisions by foreign governments etc. The fact that the domestic market for Finnish mobile games is small is a key component in raising its competitiveness and scale. According to Tekes (2014), over 90% of the production is exported.

The government role in shaping the cluster is very subtle and it can influence and be influenced by the determinants of competitiveness. The Finnish government has been on the frontline to support the gaming cluster. The Finnish government, through Tekes, is funding the development of the gaming cluster. Over the years, Tekes has spent € 65 M to fund the cluster where over 100 companies have benefitted. Skene on the other hand Skene had a budget of € 70 M for year 2014. To increase the cluster's expertise, competence and competitiveness in the long run, around 30-35 M euros has been invested for enterprise R&D&I projects and industrial research. By October 2013, Skene funded several gaming projects as illustrated in table 5 below.

Table 5 Skene Projects for Gaming cluster

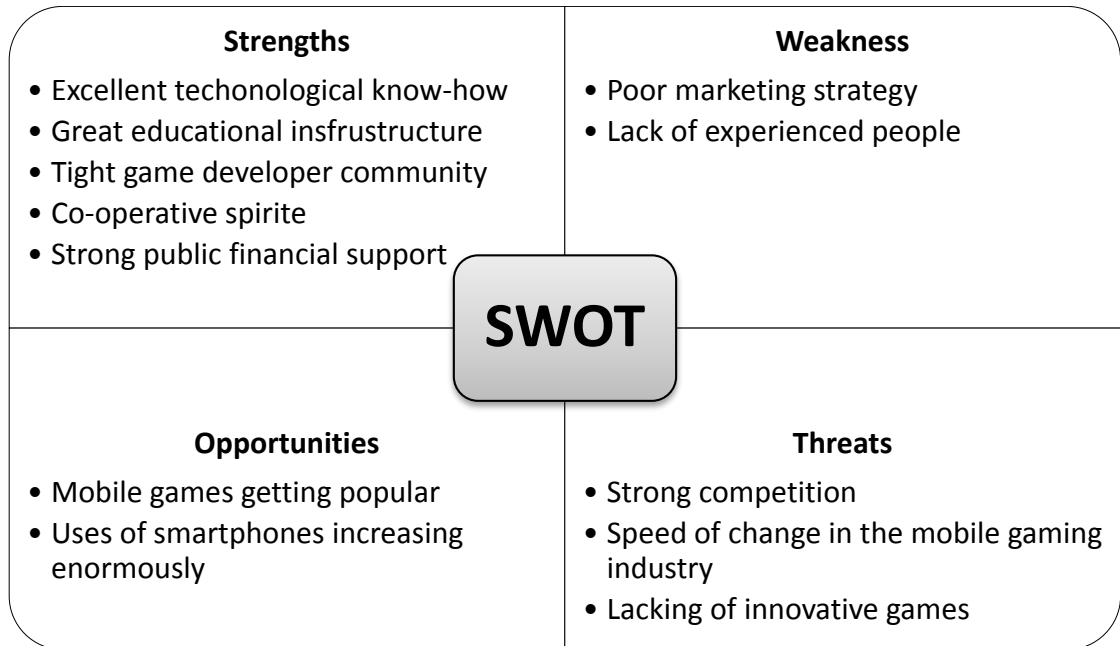
(Source: Tekes, 2013)

Types of Companies	NUMBER of PROJECTS
Start Up	21
Runner Up	8
Core Player	6
Academic	6

5.2 SWOT Analysis

In this part the authors analyzed the strengths, weaknesses, opportunities and threats of the Finnish mobile gaming cluster as illustrated figure 16.

Figure 17 SWOT Analysis of the Finnish Mobile Gaming Cluster



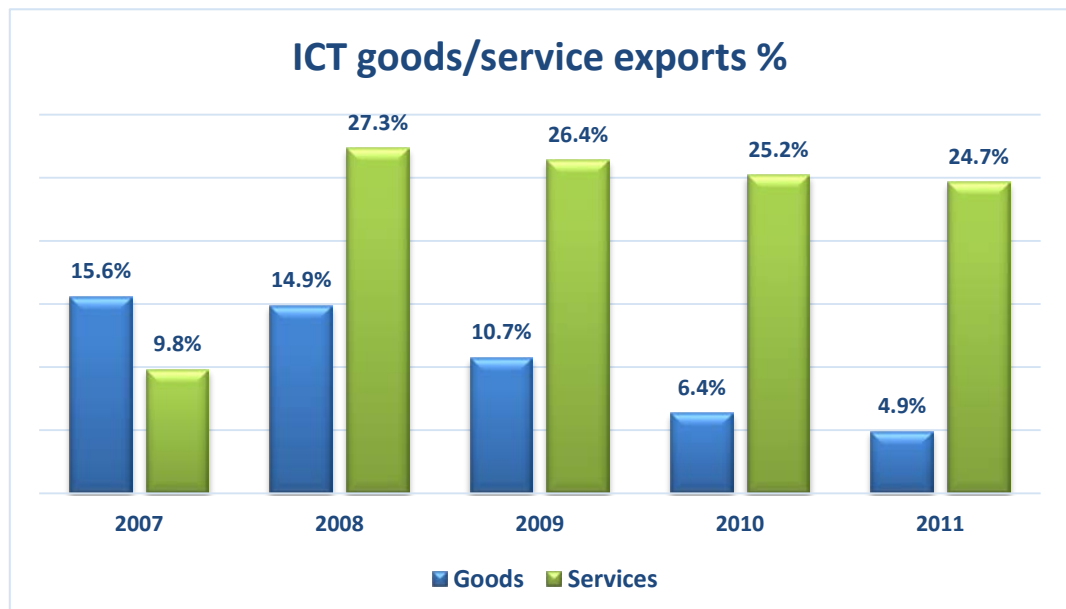
5.2.1 Strengths

Working together is the core part of Finnish culture. The strong attitude of sharing and collaborating are the main factors that strengthen the success of the Finnish mobile gaming cluster. Collaboration has formed solid knowledge base and assorted ecosystem that are effectively exploited. Although Finnish export success in mobile gaming industry was brought by Rovio and Supercell, collective support and positive environment in local market such as financial and export development assistance or other practical components were vital for those firms on the early stages of internationalization. The public funding and supports by Tekes (Finnish funding agency for innovation) give companies' opportunities to perform widespread

research and development work that is very much required to the cluster. The prospering team spirit involves helping each other as well as the new comers to enter into the industry. The cluster experts and export leaders possess knowledge and knowhow that are offered for wider use. The exceptional open spirit of sharing in the creative industries like gaming industry is seen as part of Finnish culture. Gaming is socially accepted in Finland. The mobile gaming industry offers a firm foundation for mobile game content training and development. Again Finland has great educational system that is one of the best in the world including game education and world class game research. The excellent technological know-how, huge experience especially in mobile games, independent game development, innovation and creation of concrete intellectual property are the main factors behind the success of Finnish mobile gaming cluster. Finnish society is very stable and the country has very good infrastructure in term of economy, society and technology. Finnish brands have good reputation abroad and they are strong within the global scenes; especially in ICT goods and services. The figure shows the ICT goods and services export percentage for the years 2007-2011.

Figure 18 ICT goods and services export percentage

(Source: World Bank data)



The share of ICT services was 9.8% of the total service exports by Finland in 2007. The proportion climbed to 27.3% in 2008 but it's started to decline since then. The ICT services export was 24.7% in 2011 that just under quarter of Finland's total service exports. On the other hand the quantity of the ICT goods exports were 15.6% of Finland's total goods exports. It's was the highest percentage in five years (2007-2011). Since then the percentage of ICT goods exports decreasing significantly. The share of the ICT goods dropped to 4.9% by 2011.

5.2.2 Weaknesses

Though Finnish mobile gaming industry is rising rapidly, it is facing a number of weaknesses. In the primary data collection process the authors questioned the interviewees about the weaknesses of the Finnish mobile gaming cluster; surprisingly only a few of them mentioned few weaknesses. One weakness that was outstanding amongst them all was incapacity to adequately market the industry globally. The mobile game cluster is characterized by intense global competition with some markets often being impenetrable. Traditionally selling has not been the best part of Finnish peoples' qualities. Finnish game developers create great games but they have poor marketing strategies though there are some exceptions like Rovio.

Another weakness of mobile gaming cluster according to a co-founder and game developer of Touch Foo; publishing a game has become too easy thus hurting the industry. The current system allows anyone to release products without even trying very hard. As a result the app stores (Google play, Apple appstore etc.) have thousands of poorly made mobile games. The heaps of these mobile games are burying some really good games and thus hurting the skilled independent developers that are actually trying to make a living. That can be considered as a challenge for game developers.

Finnish mobile gaming industry is relatively young. As a result Finnish gaming industry having lack of experienced people in the industry. Most of the game studios are new in the industry and operating by young people. No doubt they are skilled but not well experienced. Finland needs to hire more talented and experienced people from abroad to join the Finnish mobile gaming cluster. But geographically Finland doesn't have the most attractive working environment and it's one of the most expensive countries in the world. There are some other barriers such as high tax rate those factors don't encourage skilled workforce to move to Finland. Finnish government should eliminate all the possible barriers and support that skilled workforce all the possible ways. In addition Finland has small number of population unlike other nations such as USA, Japan Finland doesn't have big domestic customer base.

When it comes to investment the start-up game studios face hard time to get venture capitalists. The amount of venture capital in Finnish gaming industry is small comparing to other countries. That's the reason venture capital and private equity investments often come from abroad. Again the bureaucracy needs to be minimized especially when starting a new company.

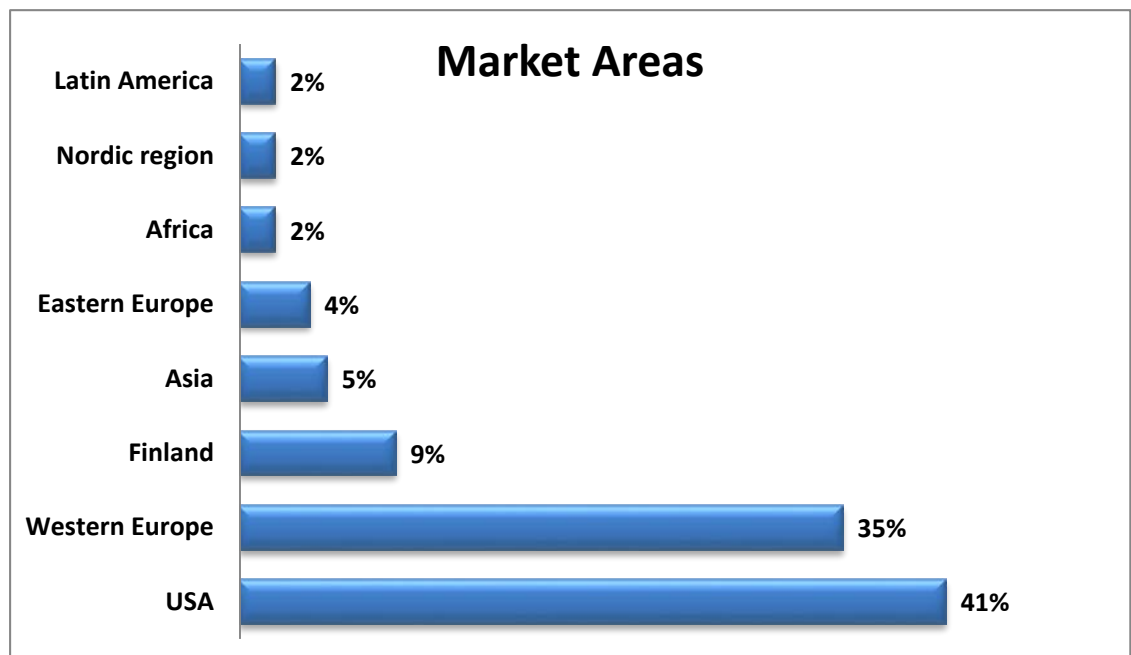
5.2.3 Opportunities

The whole game industry has already started to put more focus on the mobile sector. The Finnish game cluster already earned a good reputation in the mobile game sector. As the mobile games' popularity grows, it will become common in the overall gaming industry. The Finnish game industry has been concentrating heavily on mobile games for a decent reason. It is a global business. Mobile gaming is one of the most profitable part of gaming today. According to mobile commerce space (2014), 247 independent mobile games companies' total earning is more than one million dollar in mobile revenue in the U.S. market alone. U.S is the biggest market of Finnish

mobile games (Neogames, 2009). Unfortunately, the data available on market is not up to date regarding the areas of the Finnish mobile game industry. According to Neogames (2009) the main markets are U.S. and Western Europe with percentages of 41% and 35% respectively. After 51% of Supercell being acquired by Japanese companies' Finnish game studios have more chances to expand business in the Asian countries.

Figure 19 Main Market Areas of Finnish Game Industry

(Source: Neogames, 2009)



Only Google play store has more than 1.3 million of apps which offers access to extensive variety of mobile gaming applications. More than 300million of mobile games have been downloaded from Google play and game developers of these games generating in a combined \$600 million (Mobile commerce space, 2014).

There are three trends that will always favor the mobile gaming cluster and these trends will show us there will be millions of possible new users to be acquired. The trends are: the preference for small and mobile devices, the prices of the smart

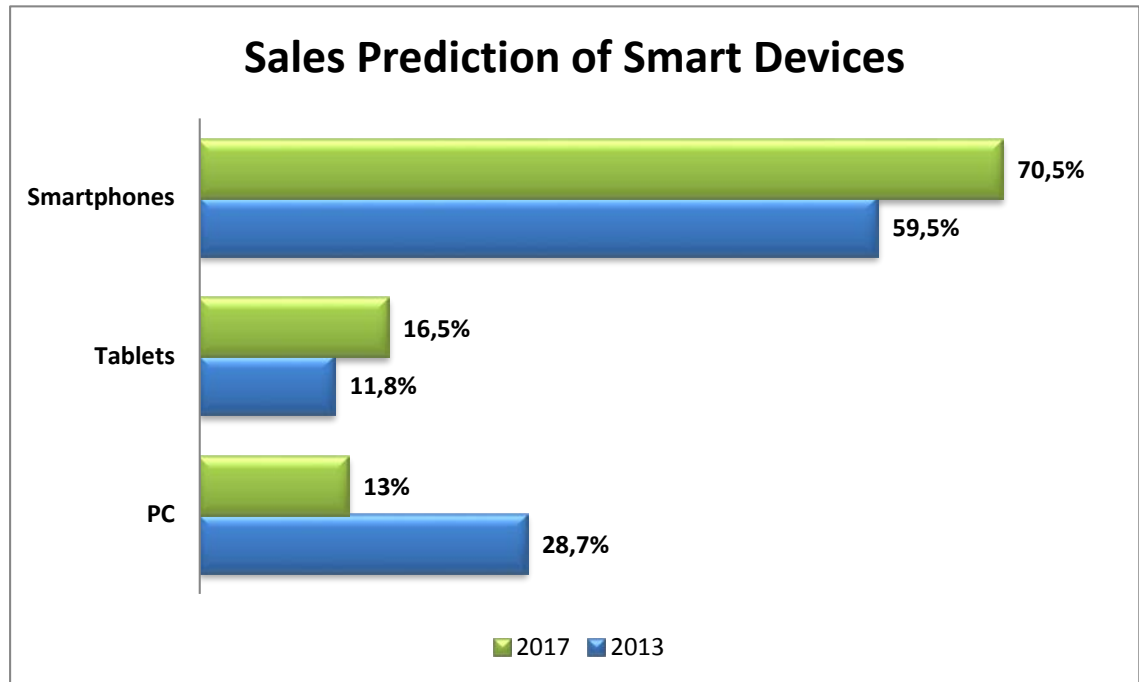
devices decreasing continuously, and the popularity and high percentage of downloaded games on mobile devices (Neomobile, 2013). Mobile devices are predicted to advance enormously, as a result the quality of the mobile games going to be better and improved. The arrival of ultra-powerful chips, emergence of HTML5 technology, and large screen and hybrid smartphones will allow to connect smart devices with TV and play games like console (Neogames, 2013). Again 4G will bring better connection and that is potential to download and transfer data faster. Furthermore this will encourage the mobile game developers to create more interactive and multiple mobile games.

Co-founder and game developer of Touch Foo mentioned people of different age groups want to play more and more because mobile games are simply in nature and can be played anywhere and at any time. People are willing to spend to more money on these games; they are buying in-games items, bonuses, tokens, and coins to make the gameplay more amusing. Even older people are finding mobile games interesting and engaging in them. The growing mobile game audience could be regarded as strength of the mobile gaming industry, he added.

A statistics by Neomobile (2013) has shown that there will be over 2 billion smart connected devices worldwide and the estimated market value will be \$735.1 billion by 2015. Another remarkable fact is, 87% of connected smart devices sales will be tablets (16.5%) and smartphones (70.5%) by 2017. The proportion was 11.8% and 59.5% for tablets and smartphones respectively in 2013 (see figure 19).

Figure 20 Sales Predictions of Smart Devices by 2017

(Source: Neomobile, 2013)



The use of digital distribution is increasing rapidly that generates more opportunities for the mobile game development market. In order to fulfil the skilled domestic workforce in gaming sector the educational institutions introducing more game studies in their study programme. Government's funding agency Tekes launched Skene - Game Refueled programme in order to boost the progress of the gaming industry.

5.2.4 Threats

Game business is not just making games. This cluster needs talented artists and people who are passionate and creative. Still in the big picture is also high business understanding with refined data analyzing. Competition in the stores (Apple appstore, Google play etc.) is intensifying and thus raising the advertising costs so

high that small teams have no change in pay from customers. This requires even more sophisticated business, branding and advertising understanding. As the mobile game industry in general most companies rely too much on recreating existing game ideas and business models. More and more companies should be innovative and disruptive. Moreover, Finnish educational institutions are unable to provide the expected numbers of workforce for gaming cluster. According to Neogames (2014) the Finnish gaming cluster is expected to double by 2020 and create about 5000 jobs. That's mean the rapidly mounting Finnish gaming cluster could hire over 400 employees each year. On the contrary, only 300 students are admitted to game-related studies in 17 Finnish education institutions annually, where about 150 manage to graduate (Jonne; interview, 2014). Another definite challenge is the speed of change in the mobile gaming industry. Everything can be changed in few years of technology, distribution and consumers preference.

6 DISCUSSION

The aim of this thesis was to increase the understanding about the Finnish mobile gaming cluster and explore the factors behind the success of the mobile gaming cluster. There were three main research questions (addressed in chapter 1.2) regarding to the SWOT analysis and the current competitiveness of the mobile gaming cluster in Finland.

In order to achieve the research goals and find the answers to the research questions the authors applied several data collection methods. To evaluate the competitiveness of the Finnish mobile gaming cluster the authors employed Porter's diamond model as the theoretical frame work. The SWOT analysis tool was also used for auditing the strengths, weaknesses, opportunities, and threats of the mobile gaming cluster in Finland.

The base of the Finnish mobile gaming cluster's success was laid in the mid 80's and early 90's. Chapter 2.2.2 dealt with the roots of the Finnish gaming industry. Vastly active 'demoscene' has been working as a strong foundation for the whole Finnish gaming cluster. That helped and encouraged Finnish programmers and developers to create games in the early 90's and nowadays those people are the cluster experts and working in the mobile gaming cluster with almost two decades of experience. Later on the strong presence of Nokia accelerated the progress in the ICT sector and inspired the young Finns to enter in the gaming cluster.

Factor conditions are where a country creates its own important factors such as skilled resources and technological base. These factors are upgraded / deployed over time to meet the demand. Chapter 2.1.1 included a brief overview of Finland. Finland might not be the most attractive country geographically but Finland has excellent infrastructures almost in all social aspects. Finland has one of the best education systems in the world and that help to generate skilled labor. Socially, Finland is very stable and one of the least corrupt countries in the world. Despite having all of those advantages Finland is lacking skilled workers in the mobile gaming cluster (see

chapter 5.1.1). In the future years Finland needs more skilled and experienced programmers and developers in the gaming industry. But current Finnish game and ICT education is unable to provide enough employees to fulfil the demand of the gaming sector. Finland needs to hire more and more experienced people from abroad in order to makeup that gap. But for some reasons Finland is not receiving the expected numbers of skilled labor from abroad. The authors think that it is high time to inspect the reason why Finland is lagging behind USA and other European countries in attracting the sharpest of students and talents from abroad despite having all those world-class facilities here.

As regards demand conditions include a more demanding local market that can lead to national advantage and a strong trend setting local market helps local firms anticipate global trends. Finland already has a strong gaming culture and home demand for mobile games. Though Finland has a small population but strong native support is always a big inspiration for the local game studios to compete globally. Finland has a high mobile penetration rate and young Finns are passionate about the technologies (see chapter 5.1.2). Finns are aware of the modern technologies from a very young age. That's why the technological know-how is seen as one of the success factors of the mobile gaming cluster in Finland.

As far as the related and supporting industries are concerned, local competition creates innovations and cost effectiveness. This also puts pressure on local suppliers to lift their game. Local conditions affect firm strategies and local rivalry forces firms to move beyond basic advantages. The Finnish mobile gaming cluster has a huge support from its related industries. Government support through Tekes (The Finnish Funding Agency for Technology and Innovation) plays a crucial role in the Finnish mobile gaming cluster's success and growth. Ilkka Paananen the CEO of Supercell gratefully mentioned that, Supercell would not exist without the help of Tekes (Neogames, 2014). Now Supercell is one of the most successful game companies all over the world and paid their loan back. In addition, the company paid 44 million euros taxes to the Finnish government in the first quarter of 2013 (Talouselämä, 2013). The Tekes funding and support (addressed in chapter 5.1.5) the Finnish home

market is small but the gaming community is exceptionally strong and active. That is rare in other game communities. Neogames and other regional gaming communities are working to keep all the mobile gaming companies under one umbrella. The local companies don't compete with each other in fact they share their ideas and invite people from other companies to test their games even at the initial stage and expect constructive feedback from their fellow game developers.

As regards SWOT, the Finnish mobile gaming cluster has many positive sides and opportunities; which will help the industry to grow even faster. But there are some weaknesses and threats as well. They need to be taken into serious consideration by the government and the related authorities. The government can minimize the bureaucracy needed in order to start a company. Good numbers of new jobs are created by the growing companies. It is sad if the ambition and passion of entrepreneurs are slowed down through filling in forms. The developers should focus on releasing the right products / services, product development and building the business. Starting a company needs to be easier and include less bureaucracy. Again the government should come forward to solve the current problem of the lack of skilled and experienced labor force in the gaming cluster. They need to attract foreign talented employees to move to Finland and work in the gaming cluster.

The future of the Finnish mobile gaming cluster looks promising. New business models, distribution models and technological development especially on the mobile platform are favorable for Finnish mobile game developers. Helsinki has already become the global mobile game capital with their success stories. Finnish mobile game developers have already proved that they are well adjusted to the mobile platform. Game development is innovative and creative work but success as an industry is also related to other factors. Lack of skilled marketing people, skilled and experienced game developers and insufficient funding are threats of the future growth but Finnish games are up to the challenge with the proficient practice of innovation and technological savvy on its side. After Nokia's recent decline Finland needs a major flagship that could give important brand value and visibility to the world. Can the Finnish mobile gaming industry become the economic powerhouse of

the nation and function as flagship for Finland? We hope that the Finnish mobile gaming cluster will continue to grow and create more and more successful games.

6.1 Limitations of the Study

The research cannot be brought out without its limitations. There were certain limitations to this thesis work that the authors have overcome moderately. One of the reasons was the Finnish language. The authors have poor proficiency in the Finnish language. There are many important data on Finnish mobile gaming cluster are written in Finnish language and it was really difficult for the authors to use those valuable data. The secondary data available on internet about Finnish game cluster is not sufficient; the authors were hugely dependent on Neogames publications and interviews available on secondary sources. Again all the data that have collected from secondary sources did not always match the requirements of the theoretical structure. Also, the authors faced hard time to draw the cluster map for the Finnish mobile gaming cluster because particular data on cluster were limited in their availability.

6.2 Suggestions for Future Research

This study aimed at exploring the Finnish mobile gaming cluster and the factors behind the success. During the whole process of writing our thesis the authors realized, there still more researches are need to be done for this gaming cluster. The authors have some suggestions regarding future research. The list of suggestions is arranged and comprises the following ideas:

- Conduct the similar study focus on better understanding fundamental principles of development and integration of whole Finnish mobile gaming cluster.
- Investigate how the participants of Finnish mobile gaming cluster interact between themselves.
- Conduct the research on industrial attractiveness of the Finnish mobile gaming cluster.
- Study how the cultural differences influencing the gaming industry. The authors believe culture plays big role on gaming preference.
- Last but not least, business is important along with good games. There need to have some research on new platforms and new business models for gaming industry.

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APPENDIX

The questionnaires used for interviews

Name of organization:

Type of Organization:

Name of person:

Job Title of person:

1. How do you see the competitiveness of the Finnish mobile gaming cluster today?
2. Who are the biggest competitors to the Finnish mobile gaming industry? What are the competitive advantages of Finland has over the competitors?
3. In your opinion what/which factors are responsible for the success of the mobile gaming industry in Finland? Please explain.
4. What kind of support do you (game industry as a whole) want from the government/related authorities?
5. What are the weaknesses of the mobile game industry? What are the strengths?
6. What are the key challenges of the mobile game industry? Please also mention some Opportunities?
7. What kind of future developments do you expect for the Finnish mobile gaming cluster? And where you want to see Finnish mobile game industry by 2020.