The Video Game Industry: Explaining the Emergence of New Markets

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Introduction
Since the first appearance of video games for the North American audience in the early 70’s (Kent, 2003) the industry has experienced a remarkable growth, both economically and culturally. Indeed, from a US $200 million industry in 1978 (Aoyama & Izushi, 2003) the sector grew to an estimated US $52.7 billion in 2010 (IDATE, 2010). In addition, although the video game production and consumption were exclusively American at the beginning (King, 2002), it expanded worldwide since then.

Although some authors compare the video game industry with the movie or the music industry (Zimmerman, 2003) because of their similar supply chain, we must consider its uniqueness. Indeed, electronic games have been flourishing rapidly in comparison with the other media (Zimmerman, 2003). In 1999, it represented a US $15.41 billion industry worldwide whereas music and movie, respectively US $38.62 and US $17.6 billion3, overshadowed it. In 2010, video games were clearly dominating the content industry, with a US $52.7 billion4 worth industry against US $35.15 and US $31.8 billion6 for the music and movie industries respectively. In addition, the persons working within the video game industry are more often drawn from gamer subcultures, creating a unique cohesion amongst the different actors of the sector (Hendricks & Winkler, 2006). Finally, video games have a very limited lifetime, closely correlated to the technology that supports it. For instance, game consoles lifetime is generally around six years and researches show that video games published on those platforms last between six month and a year.

Given its rapid growth and tremendous potential in terms of revenue and innovation, the video game industry represents a major asset for those who lead it. Aside from its mere direct impact on the local economy, through sales or royalties, video games also carry a “cultural odor” (Selfe & Hawisher, 2007). This concept is defined by Koichi Iwabuchi (2002) as “the detectable imprint of a particular culture that is left behind on a product or export”. For example, the Japanese content industry is largely influenced by its history and traditions, which increase its “cultural odor”, and is greatly appreciated worldwide. This contributes to promote the Japanese culture across the globe and significantly impacts on tourism (AFJV, 2010).

1 http://www.mpaa.org/resources/b14b3a65-ece2-45fb-869f-529b953a286e.pdf
2 http://en.wikipedia.org/wiki/Music_industry
6 http://www.bcea.org/resources/film-industry-careers/
Therefore, not only is the video game industry a sector with unique characteristics, it is also a considerable strategic advantage for the promotion of cultural values on the international scene. Although the industry was set up by the USA and Japan in its early stage, other countries have started to successfully develop their own market, such as South Korea or the UK.

In this essay, we are going to explicate how, and more importantly why, the industry leadership is shifting from one country to another. Therefore, we are going to compare the past shifts of the industry and theoretical content in the first part. Then, we will review the mechanisms of the video game industry as well as their evolution. Last but not least, we will discuss the main challenges and opportunities that the sector currently faces.

**Experience from the Past**

**Past Moves of the Industry**

In order to understand the movements of the video game industry and link it with international business theories, we are going to briefly review the past flows around the globe. Given the large timeline to cover, this part is divided in four phases separated by milestones that mark each period. Moreover, paragraphs refer to distinct markets in regards with their influence on the worldwide industry.

Finally, as we are going to see in the second part, there is an important distinction to make when talking about the nationality of a video game. Indeed, software are often developed by small countries, and published by bigger companies located in the main markets, such as the USA, Japan, France or the UK. Therefore, we are going to assume that video games keep the nationality of their developers, in that their content will be greatly influenced by cultural differences.

**The Beginning of the Industry**

The industry started in the USA, thanks to their enthusiasm for technological innovation and their entrepreneurial spirit. The first American video game, *Space War*, was developed by the Massachusetts Institute of Technology in the early 60’s by computer hardware talents located in the area as well as some experts from the Silicon Valley (Izuchi & Aoyama, 2006). Inspired by the profitable potential of this technology, Atari commercialized *Pong* ten years later, and released the first *Pong* home console in 1975 for the US households.

The US video game industry created working opportunities for engineers and programmers, many of whom had been trained for defense purposes during the Cold War. These opportunities represented alternatives for those who did not want to work with big companies or militaries (Izuchi & Aoyama, 2006). At that time, video games were sometimes perceived as antisocial. Apart from being time consuming, they could only be played by one person, on a small screen that did not allow others to get involved (Lange, 2002)

From the beginning and until the late 70’s, Atari was the only American company on the video game sector. However, they were rapidly followed by a large amount of new entrants, particularly start-ups of development and established big firms, such as Mattel or Coleco. These new actors flooded the market with products, many of which did not meet consumers’ expectations.
In addition, the arrival of relatively cheap programmable home computers that could allow individuals to program their own game led to a market collapse in 1982/1983 in the USA, dragging the European market with it. The failure was immediately exploited by the Japanese to take the leadership.

The Japanese industry started in the years following their commercial success in the USA. It was principally led by established entertainment businesses.

Nintendo was a toy and card manufacturer until they got interested in electronics in the 60’s. Their experiments led them to license the American console Magnavox in 1975 and produce its video games for the Japanese market (Izuchi & Aoyama, 2003) However, Nintendo was not the only toy manufacturer that decided to make a move towards video games and bigger companies such as Bandai or Tommy were leading the competition until the expansion of Nintendo overseas (Izuchi & Aoyama, 2006). For a long period of time, Nintendo could not access the US and European markets because of the important gap that separated the Japanese and Western culture. The first attempts to capture the US arcade market with Japanese blockbusters ended in failure. When they finally managed to breakthrough in 1981 with the release of Donkey Kong on arcade machines, they got sued by Universal for infringement on the King Kong license the following year (Kent, 2003)

The first genuine game computer was designed in the UK by the British company Ferranti, and presented to the public at trade exhibition in London and Berlin in 1951. However, nobody sensed the extraordinary potential of the invention, and the machine was dismantled immediately after the Berlin show (Lange, 2002).

Highly interested in high technologies, the UK started to set up the basis of the computer industry applied to video games during the 50’s (Izuchi & Aoyama, 2006). This enthusiasm brought them to release some of the bestselling programming home computer in the early 80’s, such as the Sinclair ZX series, at a price that competed directly with the gaming consoles sold on their market.

The Japanese Takeover
This phase begins with the release of the Nintendo Famicon in 1983, combined with the video game crisis in the US and European markets. The reasons for the success of Nintendo were various, but we will consider three main factors. First, Nintendo directly attacked the market with a very competitive price policy, which allowed it to fairly contest alongside with its rivals. Secondly, Nintendo immediately undertook to propose alliances with the best-selling arcades video games as well as with talented third-party developers. The former would provide Nintendo with a booming distribution network whereas the latter would allow the company to lean on an exclusive and quality software production. Finally, Nintendo delivered certain of the most successful games of all times, such as Donkey Kong in 1981 and Super Mario Brothers in 1985, which allowed them to capture the worldwide market (Izuchi & Aoyama, 2006). This leading position was solidified with the launch of the Game Boy and the Super Famicon, respectively in 1989 and 1990 (Izuchi & Aoyama, 2003).

By 1984, a lot of American companies withdrew from the business and Atari, pioneer of the video game industry, got severely weakened because of the resignation of many of its talents (Izuchi & Aoyama, 2006). However, if the crisis had dramatic consequences, the Japanese takeover contributed to
bring the confidence back on the US market. Indeed, better quality products as well as restricted amount of available software reignited consumers’ passion for video games. Likewise, developers and publishers found their inspiration in this Japanese tsunami and some of the major actors on today’s market were created during the 80’s, such as Electronic Arts founded in 1982. By 1990, a third of the USA households had a Nintendo at home (Izuchi & Aoyama, 2006).

The main markets in Western Europe started their development during this period. In the UK, programming became a quite popular hobby and resulted in the emergence of “bedroom coders”. Authors explain this success through the prosperous home computer industry, their low price, the population’s enthusiasm for new technologies, and the share of a common language with the US. The latter considerably facilitated the export of British products to a market that was already developed (Lange, 2002). In 1988, England created the ECTS, a video game fair targeting a knowledgeable public, vouching for their involvement in the development of their industry.

In Germany too, programming has become a hobby. However, it developed as an underground activity, as opposed to the UK. Moreover, Germany is still split in two parts and the strong Soviet influence that dominates the Eastern region does not foster foreign investment. In France, the national pride as well as cultural differences with the USA leads them to develop an independent home market. In addition, the French content industry enjoys a favorable legislation that sets up quotas of national cultural production, making it hard for foreign productions to take off and providing national companies with good incentive to develop their business. (Lange, 2002)

Tetris, the most successful European game, was developed in Russia in 1984, which is otherwise quite insignificant on the global video game market. (Lange, 2002)

New Born

Technology development in the early 90’s weakened the monopoly of Nintendo, threatened by Sega and Sony. Nintendo chose ROM cartridges over CD-ROM, even though the latter featured a bigger storage capacity and lower production costs. Indeed, cartridges were more difficult to copy and had better loading data efficiency. Boosted by the CD-ROM competitive advantage, Sony released its Playstation 1 (PSX), in 1994 in Japan and in 1995 in the USA and Europe, which featured the first real 3D environments on video game consoles. In 1999, Sony had a 70% market share in Japan and a 55% market share in the USA, a success built on the same model of game development integration that Nintendo used at its beginning (Izuchi & Aoyama, 2006).

Although the USA did not have the leadership on the game console market, their local developers and publishers were arguably the most influential on the computer gaming sector. Blizzard, an American developer founded in 1991, published certain of the most successful games of all times, such as Warcraft (1995), Diablo (1996) and Starcraft (1998). The latter notably met with success in South Korea, where it contributed to the creation of e-sports (Hjorth & Chan, 2009).

In Germany, programming is not seen like a potential market. However, this situation changes in the early 90’s with the fall of the Berlin
Wall and the opening of the Neuer market, which makes investments possible to support the industry and build bigger structures. (Lange, 2002)
In France, Infogrames (1983) and Ubisoft (1986) have first grown locally in the 80’s before expanding to the international market in the early 90’s. Ubisoft now ranks 7th amongst the worldwide biggest video game publishers.
In the UK, the flourishing industry mainly leant on the developing skills of the “bedroom coders”. Their main asset was an extraordinary creativity that some authors attributed to the non-professionalization of the activity, generating free-thinking amongst the developers (Izuchi & Aoyama, 2006).
The South Korean market emerged in the mid 90’s, along with the development of a powerful broadband network. Because of restriction on the imports of Japanese cultural products, South Korea developed their own video game industry far from the influence of game consoles. The considerable success of multiplayer computer games, such as Starcraft, led to a flourishing online computer gaming sector (Hjorth & Chan, 2009).

The Current Video Game Market
The Xbox was released by Microsoft in 2001 to counteract Sony’s high penetration rate in worldwide households. Indeed, contrary to Nintendo, Sony was also a major actor of the computer industry and the arrival of the Playstation 1 and 2 on the market was perceived by the American firm as “Trojan Horses”, designed to dramatically increase consumers’ brand loyalty. The release of the Xbox marks a turning point in the console manufacturing history. First, it marked the return of the USA on the game console market, almost two decades after the disappearance of Atari, although Japan managed to develop a quasi-monopoly on this sector since the beginning of Nintendo on the worldwide market. Secondly, Microsoft became part of the debate about open source software. Even though the other console manufacturers were considering sharing their programming knowledge and literacy, the American company wanted to increase its supremacy on software development. Communicating coding information would be time-saving for the developers and manufacturers, who would not spend much time exploring the limits of the machines. (Selfe & Hawisher, 2007)
The European market is now big enough to be self-sustainable. The expansion of the European Union should increase creativity through culture diversity and enlarge the panel of consumers. However, this market also faces challenges due to its variety, notably regarding the different languages, cultures and legislation of European countries. The market is more culturally diversified than any other market, generating more creativity in software development than its counterparts. Moreover, the easy access to international publishers enables countries with little video game history background to develop their productions with lower entrance barriers. For instance, Finland realized an impressive breakthrough when releasing Max Payne (2001) on the global market. Likewise, Sweden developed worldwide successful games, such as the Battlefield series or Mirrors Edge (2008).
South Korea is the country with the best broadband in the world in 2010. The Korea Communication Commission is currently investing $24 billion to provide the country with 1Gb/s access by 2012, fifty times more than New Zealand (theoretically 20Mb/s). The country has emerged as the world center for Massively Multiplayer Online (MMO) games and e-sport. E-

7 http://www.uswitch.com/broadband/news/2010/02/top_10_broadband_countries/
sport refers to video game competitions that led to the rise of pro-gamers, who play video games for a living. In fact, certain competition total prize purse can reach US $1 million, with a US $150 000 for the winner. In March 2007, South Korean online games account for 32% of worldwide online gaming market and in 2010 it represents 5.8% of the global video game market.\textsuperscript{8}

Japan is now trying to compete with the recent online gaming trends by developing games for the Asian market (Hjorth & Chan, 2009). Indeed, even though the Asian market did not reveal its consuming potential at the beginning of the video game industry, because of the low power of purchase and poor technology development, its importance substantially increased in the past decade.

China has shifted from “cheap workforce country” to a major consuming market. In 2008, 3.5 million of the total 8 million World of Warcraft subscribers were located in China. In addition, local game producers are starting to flourish, although they are currently focusing on the domestic and Chinese language territories in the Asian market (Hjorth & Chan, 2009).

Western companies have been trying to enter the Korean market through investments in the major game development houses, and the three console manufacturers implanted subsidiaries to capture and dominate the online game market. Online console games have emerged with the last generation of console, which includes internet connection and platforms to connect the former lonely console gamer with one’s homologues. This new online gaming platform has been proved quite successful with a 25% growth in 2009 whereas computer online gaming suffered a slight decrease at the same time.\textsuperscript{9} However, computer online gaming remains significantly dominant on the online gaming market. In return, transnational Korean game companies used the money invested in their infrastructures to expand into foreign markets, but only a few could afford such expansion (Hjorth & Chan, 2009). In value, the online gaming market has passed the console gaming market. Thus, the USA and South Korea now enjoy a favorable trend for the development of their industry.

Japan and the USA are still dominating the console gaming market and the games published on these platforms are often released in Europe with an important delay and a higher price (Lange, 2002). Although we could think of an unfair consequence of the leaders’ domination on this market, this delay may be explained by the European television PAL standard that requires a modification of the games to adapt them to the European encoding system. However, this tendency is slowly fading in favor of online sales and legal download platforms. For instance, the Playstation Network makes downloadable contents available to its customers. This content includes independent short games, plug-ins (piece of software designed to enhance a game content) or content unlockable through achievements in games. However, the large capacity of the embedded hard drives should eventually lead to the online sales of full games.

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\textsuperscript{8} http://news.mmosite.com/content/2011-10-12/korea_game_encyclopedia_2011_issued_1.shtml
Explaining the Shifts through Theories
The industry is indeed moving across borders and is flourishing on new markets to capture new consumers. We are now going to explore theoretical content to explain these shifts. Five theories will be discussed as well as their relevance toward the video game industry.

Creative Destruction (Schumpeter, 1942)
The Creative destruction theory has been developed by Joseph Schumpeter (1942) and refers to the process of transformation that follows significant innovation (Metcalfe, 1998). For instance, Internet made minitels obsolete, DVDs replaced VHS, and cars only use horses in their engine.

We are going to consider two levels to which the theory may be applicable: the video game industry and its shifts on the international scene.

In the video game industry, creative destruction is partially applicable to hardware and the software that they support. For instance, almost every six years, consoles are replaced by newer generations that feature new gaming practice and more power. Likewise, handheld consoles, such as the Nintendo DS, slowly disappear as smartphones arise (Brightman, 2011). However, the emergence of new gaming trends has not proved lethal for traditional gaming. For instance, online gaming is now bigger in value than console gaming although console gaming keeps growing (IDATE, 2011).

If we now take a look at the shifts on the international scene, we observe that new markets do not destroy the previous ones. Instead, they complete each other. For example, the Japanese video game industry has developed a game console culture on the international scale. The arrival of online computer games developed by South Korea has not made console gaming obsolete, as discussed above. However, online computer games reach customers who would not play video games otherwise. Likewise, the rise of Facebook and Iphone games has led to the arrival of casual gamers who are not interested in traditional video games, creating a new market.

Therefore, creative destruction alone is not relevant in our attempt to explain the emergence or the shifts of the industry on the world map.

Clusters (Porter, 1990)
Clusters describe localities that concentrate companies of a particular industry, generating a centralized competition. These areas generally enjoy the proximity of other companies relevant to their supply chain. A major paradox of clusters is that the global economy is supported by local clusters, so the distant rivals cannot match the skills and knowledge that is developed in these places (Porter, 2008).

Clusters can arise through historical circumstances, sophisticated demand, prior existence of suppliers relevant to the industry, or stimulation provoked by one or two major companies, which successfully developed their business (Porter, 2008). They can also emerge through favorable legislation environment or proximity with other markets. For example, the industry has boomed in Montréal since 1997 and the establishment of Ubisoft in the city. Indeed, the Canadian government sensed the opportunity to become a major cluster of game development and generated a favorable economic environment, subsidizing heavily the jobs in the sector (Sharman & Dyer-Witheford, 2005). Therefore, companies implanted in Montréal benefit from a better access to an “existing pool of specialized and experienced employees” (Porter, 2008).
Clusters work with the assumption that modern competition depends on productivity whereas the video game industry mostly relies on innovation and creativity (Porter, 2008). Nevertheless, the video game industry does not entirely lie on clusters anymore, in that companies are looking for innovation. Indeed clusters are useful to explain competition in a context of industry led by technology, but in the video game sector they would rather exhaust creativity because of the lack of diversity.

Nonetheless, clusters may be applicable to video game publishers. On the one hand, they preserve the innovative freshness of worldwide third-party developers, by promoting independent local game development. On the other hand, publishers need to combine these quality products with optimized networks of manufacturers and distributors, which will be more accessible in video game clusters, such as Montréal or South Korea.

**Porter’s Diamond (Porter, 1990)**

This model has been designed by Michael E. Porter (1990) as an attempt to explain the competitive advantage of Nations through four main factors, to which two have been added.

A. The first criterion is determined by the Nation’s relative abundance in factors of production. The more resources a country will possess, the more competitive it will be. These factors are divided in two categories:

- Basic factors include for instance natural resources, geographical situation and demographics. The latter is the only basic factor applicable to the video game industry. Indeed, large demographic implies a great amount of consumer as well as important human resources.
- Advanced factors are more significant for competitive advantage and include more sophisticated criteria, such as technology advancement, level of education and infrastructures, which are particularly applicable to the video game industry.

B. The second factor relates to the demand condition. It takes the size and sophistication of the national market into account.

- Sophisticated demand: With the evolution of information technologies, communication between customers and companies has improved dramatically as well as the average consumer awareness. This trend has contributed to orient consumers toward a more global and sophisticated purchasing behaviour. Consequently, consumers want better and cheaper quality products. In addition, companies need to differentiate themselves from their competitors. Hence, sophisticated demand leads to a more competitive national market. In the USA, the sophisticated demand has led to the 82/83 crash of the sector because of the poor quality of the products released by the numerous companies.
- The size of the home market refers to the possibility for companies to achieve satisfying scale economies. The bigger the market is, the more development a company will have to achieve before the market becomes saturated.

C. The third factor refers directly to the concept of cluster discussed above. National market will become more competitive as they have a highly developed supporting industry, such as distributors and manufacturers. At the beginning of the industry, the Silicon Valley provided the American video game manufacturers with an experienced network of supporting industries.
D. The last factor focuses on firms rather than the market and is divided in two parts:

- Domestic competition: new local competitors cancel the competitive advantage of existing firms. High competition in markets raises the overall quality of production and eliminates the weakest rivals. Therefore, highly competitive industries lead to competitive Nations.
- Managerial system: Porter argues that each industry requires a specific organizational system. Consequently, inadequate managerial models would impact negatively on a Nation’s competitiveness. In the video game industry, it is vital to preserve developers’ creativity, leading to a loose management style.

E. Although “firms are competing, not nations” (Porter, 1990), governments greatly influence competition on their markets. For instance, they can generate appealing environments through tax incentive or high educated workforce. Tertiary education institutions have recently included training programs specifically designed for the video game industry. For example, the Media Design School located in Auckland, New Zealand, provides its students with different programs which range from 3D animation to Creative Advertising, exclusively for video games10.

F. Finally chance refers to everything that is unpredictable, such as wars, natural disasters or even market fluctuation.

Aside from its intrinsic relevance, Porter’s Diamond model can be used to identify “three growth stages of national competitive development” (Porter, 1990).

- Factor-driven stage: industries build their competitive advantage with the factors of production explained above. They mainly use basic factors, although advanced factors are far more relevant to explain the emergence of video game industries on the worldwide market. As discussed above, the UK industry boomed in the 90’s thanks to the computer skills of bedroom coders
- Investment-driven stage: companies invest in technologies and infrastructures that should allow them to increase their productivity.
- Innovation-driven stage: companies invest in innovation that should allow them to reach competitive advantages.

Porter’s Diamond is almost entirely applicable to the video game industry. Yet, it must be completed by other theories in order to improve its accuracy.

Theory of Technology

In this part, we are going to confront two positions in order to determine the role that technology plays in the emergence of worldwide video game industries.

The Instrumental theory of technology is the most commonly accepted position. This theory argues that technologies are tools designed to merely serve the purposes of their users (Feenberg, 2005). Considering this framework, video games would be “socially determined”, in that they answer “social needs” for new forms of entertainment (Dovey & Kennedy, 2006).

10 http://www.mediadesignschool.com
On the other hand, the Substantive theory is significantly more pessimistic. It ascertains that technology has become autonomous and that the worldwide society is now supposed to maintain its evolution (Feenberg, 2005). According to this theory, video games have been created by technology, and are now a “technology determined” media form (Dovey & Kennedy, 2006).

Although the Instrumental theory may be relevant to explain the emergence of video games, it does not provide a theoretical content that could help us explaining the shifts in the current markets. Indeed, nowadays the technology required for video game development is available globally and countries are capable of growing their video game industry. The Substantive position does not explain why video games industries have not flourished all around the world, even if technologies are accessible.

Cross-Sectoral Skill Transfer
This theory refers to the transfer of skills that occurs between two industries that require similar sets of skills. This transfer can be done either between a declining industry and a new one, or between two existing industries. However, incentives are necessary for the shift to be successful.

At the beginning of an industry, pioneers will be motivated by high wages and growth prospects, the way the established industry with potential relevant skills perceives the emerging one and the socio-cultural cohesiveness between the existing and emerging industry. Moreover, the transition phase before the creation of a new industry involves the attraction of the workforce, which relies on different social network. In fact, hobby clubs, meeting at shops, trade shows and conventions were valuable tools to gather both the firms of an existing industry willing to move on and the pioneers of the emerging industry (Izuchi & Aoyama, 2006).

The Japanese content industry is largely influenced by its manga/anime pop culture. The video game industry enjoyed skill transfer from manga and animated movies, resulting in expertise for character production and graphic design, as well as proficiency in scenario building. In addition, the anticipated success of the industry attracted workers through higher wages and an expected important growth of the sector. The strong link between manga, anime and video games is still discernable, as illustrated by the successful promotion of Pokémon in the late 90’s. The release of this game in 1996 by Nintendo was relatively fruitless until the first appearance of pokémons in manga edited by Japanese newspapers. The following year, the launch of the Pokémon cartoon on TV created a worldwide buzz that marked the beginning of a long lasting Nintendo success (Izuchi & Aoyama, 2006).

In the USA, the proximity between the comics, movies and video games industry is exemplified by the use of Marvel characters, originally comic books heroes, in movies and video games. However, there is little evidence linking comic books and animated movies to video games in the USA. Indeed, unlike their Japanese counterparts, these industries peaked in the postwar period and were already significantly weakened at the beginning of the video game industry (Izuchi & Aoyama, 2006). Therefore, cross sectoral skill transfer was not directly applicable to these industries.

France has a deeply rooted comic strip culture that contributes to generate graphic and scenario creativity.

Finally, Germany had a long history of toy manufacturing, especially train toys that required high technical skills and a particular meticulousness.
The industry started with a German firm in 1891 and declined in the 60’s to become an adult collector business. However, this attention to detail in game design remained part of the German culture. Local developers are reputed technology focused, and their dedication to technical perfection sometimes results in complex and monotonous games. Consequently, German developers had difficulty to find international publishers, slowing down their expansion.

Given the complexity of the industry as well as its relative immaturity, none of the theories developed so far is directly applicable to video games. However, the models reviewed are all relevant to some extent. Therefore, these theories should be combined in order to explain the emergence of new markets. For instance, amongst the reasons for the remarkable growth of the South Korean online game market, we may consider:

- The rapid progress of Information Technology (IT) and the policy related to its improvement: In 1995, the government enacted the implementation of the Korean Information Infrastructure (KII), which purpose was to set up an efficient and powerful information network in South Korea. As stated earlier, nowadays, the country possesses the best broadband infrastructure in the world. Porter’s Diamond helps us understand the use of advanced resources by the industry whereas the theory of technology is illustrated through the use of the internet as a basis for the Korean video game industry.

- The incentives of the South Korean government toward game development: In 2005, the government invested US $20 million in improvement of graphics and virtual reality technologies. Although this amount does not compare with the financial requirements of such advancement, this investment vouches for the will of the government to play a role in the video game development. The role of governments in the success of the national industry is clarified by Porter’s Diamond.

- The late Japanese arrival: Korea’s colonization by the Japanese in the early 20th century and a clear anti-Japanese sentiment due to unsettled disputes have made difficult for Japanese culture products to cross the South Korean frontier. In fact, until 1998, Japanese were banned by the government and the first appearance of Japanese consoles on the market occurred in 2002. Unfortunately for the Japanese firms, at that time 25,000 PC bangs were already welcoming the Korean gamers. Clusters contribute to explain the development of the local industry, in that they go over historical context to explicate they appearance.

The Video Game Industry
How does it Work?
Just like the other industries, video game production involves manufacturers, consumers, competition and advertising. Nevertheless, as it has been discussed in the introduction, the actors of the industry are drawn from the gamer subculture and are predominantly member of self-regulated organisms, which protect their interests and ensure the cohesion amongst the sector in the different countries (Winkler, 2006).

The different steps of the supply chain are discussed in the following parts. We detail the role of each entity as well as the main challenges they currently have to face.
Developers
Developers are the creators of the game. They conceptualize and implement gameplay processes. To make a parallel with the book industry, developers are the “authors” of the game and get royalties according to the turnover generated by the sales. They are often small, third-party companies, which employees are drawn from game fan communities. On the one hand, companies that are driven by their passion for video games will be more creative and keep up their productivity. On the other hand, and given the fierce competition of the sector, these companies have to deal with the rules of business. Therefore, successful game firms will be the one achieving a good balance between gaming culture and gaming business (Winkler, 2006).

Although video game development in the 70’s only involved primitive graphic and sound design, the sophistication of the industry logically led to diversify the panel of jobs involved in the development process. Nowadays, music composers, coders/programmers, character designers, level designers and many others participate to the creation of playable software.

Many game designers are recruited through art school. They are inspired by a large range of aesthetic influence according to their home country. Japanese will be exposed to traditional painting techniques whereas Western European will draw their inspiration from the Renaissance artists (Jenkins & Squire, 2003). For example, the Japanese developers of Clover Studio released Okami in 2006, which graphics are largely influenced by Japanese prints.

Developers can be either independent, owned partially or entirely by a game publisher, or owned partially or entirely by a console manufacturer. Even if the merge with a major company eliminates most of the financial issues, it will eventually impact on the creativity of the development studio.

Competition has increased dramatically and the sales of software have experienced a slower growth than development costs. On the one hand, game developers look to publishers to bear the risk of production investment. On the other hand publishers try to minimize the risk by giving the priority to games that come from developers that have proven right in the past, leading to less innovation. (Dovey & Kennedy, 2006)

Publishers
Publishers are the core of the current video game industry, in that they finance and enjoy the greatest bargaining power of the supply chain. Their primary function is to produce and manufacture games, but they are also in charge of their marketing and communication.

As discussed above, the increasing costs of development have led publishers to bear financial risks, reinforcing their bargaining power toward developers. Therefore, publishers can choose to interfere in the game development process, limiting the creativity of developers. For instance, the pressure put on Yasuno Matsuno during the development of Final Fantasy XII led him to a nervous breakdown that forced him to quit after two and a half years of intense work.

They evolve in a concentrated sector, and 65% of the worldwide turnover is made by the 10 biggest video game publishers.
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<td>2</td>
<td>Activision Blizzard (USA)</td>
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Game publishers are often former successful developers that expanded to become multinational companies. It is necessary for these firms to be implanted internationally because they need an in-depth knowledge of the worldwide market in order to be competitive. Some of the major publishers can either develop or outsource the development of their games to other companies having a similar corporate culture. In some case, they may even become non-gaming firms and focus uniquely on administration and management (Winkler, 2006).

Finally, publishers employ sales teams, who promote their products to the distributors on the different markets.

Although the industry has experienced some dramatic changes in the past decade, the role of the publishers has remained mostly the same. Developers still need intermediates to publish their creation, and the arrival on new platforms, such as Facebook or the Apple Store, has simply increased the competition, adding new kinds of publishers to this complex sector.

**Video Game Associations, and Rating Entities**

Video game associations are self-regulated organizations that promote and protect the interests of the video game industry on the main worldwide markets. Thus, the Computer Entertainment Supplier’s Association (CESA) exercises in Japan\(^{11}\), the Interactive Software Federation of Europe (ISFE) in Europe\(^{12}\) and the Entertainment Software Association (ESA) in the USA\(^{13}\). These associations have all created their rating system, which is managed by independent entities, to respond to the concerns about the exposure of young audience to inappropriate content in video games. For the purpose of this paper, we are going to give the example of the USA, since the functioning is basically the same on the different markets.

The Entertainment Software Rating Board (ESRB) is a non-profit, self-regulatory body created in 1994 by the ESA (Dang, Lee, & Nguyen, 2005). ESA members include the main actors of the worldwide video game industry established in the USA, including the three console manufacturers, Microsoft Xbox, Nintendo, and Sony (Theesa, 2011). Therefore, those who choose not to abide by the ESA rules may get themselves into some problems. For

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\(^{11}\) [http://www.cesa.or.jp/english/](http://www.cesa.or.jp/english/)

\(^{12}\) [http://www.isfe.eu/about-isfe](http://www.isfe.eu/about-isfe)

\(^{13}\) [http://www.theesa.com/](http://www.theesa.com/)
example, although the rating system is voluntary, retailers generally prohibit the sales of unrated games, and console manufacturers will not license them. The only purpose of the ESRB is to provide consumers with information, so they can make advised choice (Pompliano, 2005).

The rating process has become quite controversial over the past few years due to the release of certain games that have challenged the rating system (BBC, 2005) even though it proved to be efficient for its purpose (Pompliano, 2005). Amongst the factors which can be subjective, we consider cultural differences. For example, the Japanese do not process emotions in the same way that people from western countries do, which results in significant differences in the ratings (Anderson, Carnagey, Flanagan, & Benjamin, 2004).

Due to the subjectivity around the rating schedules, the relevance of video game ratings are questioned and some critics claim that the ESRB rates the video games too softly, for commercial purposes (Anderson, et al., 2004).

Game publishers are legally bound by contract to abide by the ESRB rating regulation. In the case of non-compliance, they expose themselves to revocation of the original rating and sanctions including monetary fines. (ESRB, 2011).

Distributors
Distributors are in charge of providing the retailers with the games that they purchased from the publisher and stock the products. Buyer staffs who know the manufacturers usually select the game with the highest commercial potential (Winkler, 2006), hence dissuading developers to take innovative risks (Zimmerman, 2003). They play a crucial role between manufacturers and retailers. Assuming that their staff is knowledgeable about the products they buy and sell, they may be a strong advocate for a particular title. Therefore, distributors can influence the success or failure of a game on their market (Winkler, 2006).

However, the importance of physical distributors is progressively declining with the increase of dematerialization. The latter is used to describe the move from physical to digital support of content (Pichon(AFJV), 2011).

Concretely, we will consider two main trends that represent major threats toward physical distributors. Firstly, the emergence of online distributors, such as Steam or the Playstation network, which offer the consumers immediate access to game contents. These digital distributors do not have stock fees and their running costs are much lower than their physical homologues. Therefore, they can distribute games that would not meet a significant commercial success, but that contribute to foster the creativity of independent game developers. Secondly, the arrival of new communication platforms, such as Facebook or smartphones, generated the development of applications that can be played on these supports. In this case, Facebook and the Apple Store take on the publishing, distributing and retailing role, which are supplied directly by third-party developers.

Consequently, 40% of the software should be sold through online channels in 2011 (IDATE, 2011), encouraging the developers to experiment new concepts with minimized financial risks.
Retailers
Retailers get products through their distribution network, in regards with customers’ preferences. The local trends are analyzed thanks to the staff keeping track of the different products sold (Winkler, 2006). Retailers are in charge of the retail space and optimize the display of products and promotional material in order to maximize their turnover.

Because of the large amount of games released and the high costs of product storage, game retailers choose to sell mainly the top chart games, leaving little room for the games which release is not supported by expensive marketing campaigns (Zimmerman, 2003). Nevertheless, sales are slightly different according to the type of retailer as well as the customer service provided. Indeed, superstores offer poor service and customers will buy products that enjoyed a great marketing campaign. Little retailers will have a closer relationship with their customers, and will be more likely to orient them toward games that may not be popular, but noteworthy.

Like physical distributors, brick-and-mortar retail stores suffer from dematerialization. They have developed new strategies in order to attract consumers in their business. For example, some retailers propose to buy their customers’ old games at a fixed price, to which they add in-store vouchers.

Price Share of Video Games
In this part we will detail the price share of console game, in that it represents the most complex case. The percentages that we show are not fixed, and can be negotiated by the different parties by contract.

![Price share of a console game](image)

The 35% are usually split equally between the publisher and the developer, except as otherwise provided. As stated above, marketing is handled by the publishers in most of the cases. Hence, the 10% will be added to the initial publisher’s share.

In the case of a computer game, the 15% royalties going to the console manufacturers will be added to the publisher/developer share.

In the case of the production of “Apps” for the Apple Store, the price share is extremely simplified: Apple charges US $99 to grant developers with
the digital certificate needed to publish these applications, and recover a 30% cut for providing the purchasing infrastructure and delivery platform.\textsuperscript{14}

**Entrance Barriers**

Entrance barriers may be relevant to explain the challenges faced by aspiring developers and publishers. Therefore, we are now going to discuss the entrance barriers according to the different platforms and software supports as well as the future prospects caused by the arrival of new actors on the market.

Games are a big business that has been growing rapidly, and that is still expected to expand. The important economic scale of the industry limits the margins of little game publishers, resulting in high entrance barriers (Zimmerman, 2003).

Console manufacturing definitely raises the highest entrance barrier of the whole video game industry. Indeed, the sector leans on the “razor and blade” model of manufacturing, and consoles are sold at cost or even lower whereas the profits will made through selling software (Dovey & Kennedy, 2006). Consequently, console manufacturers are primarily old and established companies that can invest massively in console development, expecting a return on the long-term. However, in case of success, the risk is largely compensated by the economic advantages, the dominating position on the video game industry and the reinforcement of the company’s brand.

Console software development faces three types of barriers. First, console manufacturers have to accept to commercialize the software on their support, which takes into account a large set of criteria. The overall quality of the game and its accordance to the spirit carried by the console are generally taken into account. Secondly, development on console requires a specific knowledge of the coding language, communicated by the console manufacturer in exchange for a considerable amount of money. On the one hand, complicated programming codes restrict piracy and allow console manufacturers to extend their machines lifetime, because it will take time for developers to reach their technical limits. On the other hand, developers are going to avoid the console because it will take more time, and more money to achieve acceptable results. Last but not least, console software development implicates more costs than computer software. Indeed, producers must purchase “development kits” from the hardware manufacturer, which allow them to program their software for a particular game console. These kits generally cost over US $20,000, to which we can add a 15% cut on software sales (Dovey & Kennedy, 2006). These factors contribute to set high entrance barriers for game developers, what will be compensated by a great network of distribution and a better visibility.

Computer software development only faces economic challenges. Although the 80’s generated the growth of “bedroom coders” that could program computer games by themselves, recent software require far more resource that their predecessors. For instance, the development of Max Payne 3 is expected to cost over US $105 million, and would need to sell 4 million units to break even\textsuperscript{15}. However, as discussed above, the financial risk

\textsuperscript{14} http://www.intomobile.com/2008/03/19/apples-iphone-appstore-digital-application-signatures-explained-developer-costs-lowest-in-industry/

\textsuperscript{15} http://www.industrygamers.com/news/rockstars-max-payne-3-could-cost-105-million-to-develop-require-4-million-sold-to-break-even/
is now carried by publishers, contributing to lower entrance barriers for computer games developers. Consequently, we estimate it medium-high.

Facebook and smartphones application development present the lowest entrance barriers of the industry. As shown above, the production of “Apps” for the Apple Store only cost the developers US $99 and a 30% cut of the sales.\textsuperscript{16} In addition, the games do not require advanced technology or great developing teams. Facebook enables everyone to create and develop their own game, which will be distributed through the social media for free.

With the appearance of new platforms for game development along with casual gaming, the industry provides developers with alternatives with easier access. Thus, we could see a return of the “bedroom programmers” but on a larger geographic scale. The industry would also enjoy an enhanced creativity that would not focus on graphics improvement.

\section*{Current Trends}

The video game industry is currently undergoing some the biggest changes of its history. Through new trends, new gamers, new practices and new actors, the sector is now expanding both geographically and socially. Therefore, we are going to review four of its most significant innovations, which are going to play a key role in the next decade.

\subsection*{Dematerialisation}

As discussed above, almost 40\% on the video game industry incomes arise from the dematerialisation of the distribution through online practices, such as item selling (IDATE, 2011). For instance, the digital distributor Steam allows its members to purchase and download almost any computer game content, as soon as it is released in its country of origin and for a significantly lower price than traditional retailers. Therefore, this trend has gradually modified the supply chain.

We are going to consider the case of Steam in order to explain the impact of dematerialisation on the stakeholders, in that its sophistication already takes in account most of the biggest challenges currently faced by the industry.

Steam was developed by Valve Corporation, a software developer famous for its game Half-Life released in 1998. In 2011, the platform distributes over 1,300 games to 35 million active users.\textsuperscript{17} We are going to examine the supply chain model reviewed above in two different situations:

- Valve is not the developer of the distributed game: The game is developed by a third party and produced by a publisher, who is going to distribute it through Steam. The latter will hence assume both the role of distributor and retailer to the detriment of brick-and-mortar distributors and retailers.
- Valve is the developer of the distributed game: the game is produced by a publisher and distributed through Steam. Valve will control almost all the steps of the supply chain, except for the publishing part, and maximize its profits. In both the situations, traditional distributors and retailers will be excluded from the selling process.

\textsuperscript{16} \url{http://www.intomobile.com/2008/03/19/apples-iphone-appstore-digital-application-signatures-explained-developer-costs-lowest-in-industry/}

\textsuperscript{17} \url{http://en.wikipedia.org/wiki/Steam_(software)}
Unfortunately, Steam does not reveal publicly the revenue split between the different entities.\textsuperscript{18}

As illustrated in this example, internet has contributed to eliminate intermediates, which contributes to lower the entrance barriers, leading to more independent games and developers. In addition, dematerialisation enables worldwide players to access the same video game contents at any time.

**Evolution of Technologies**

Technology has a crucial role in game development, and has been the main driver of innovation in the past decades. However, innovation should not be only technological and the emergence of new gaming platforms is certainly going to disrupt the functioning of the industry.

For instance, Sony is making a move toward the convergence between smartphones and mobile consoles with the release of the Playstation Vita by the end of 2011. (IDATE, 2011) Certain phone manufacturers like Nokia already tried to bridge the gap between mobile phone and console, resulting in a commercial failure.

In this context of convergence of technologies, Japan and South Korea have chosen two different gaming approaches. With its historical background of console manufacturer, Japan is clearly oriented toward home and privatized gaming. South Korea, on the other hand, has developed an important network of stationary computers in public spaces, the PC bangs, where players can access their favorite online games (Hjorth & Chan, 2009). These trends created a paradox in social gaming: The last generation of Japanese game console, Nintendo Wii and DS, aim to gather friends and family around amusing mini-games although Korean MMO games concentrate millions of individuals separated by computers. Privatized home gaming has become convivial whereas gaming in open spaces is definitely individualistic.

Likewise, the arrival of new communication platforms, such as Facebook or the Iphone, has created an alternative to the competition over the greatest graphics. Developers now have the choice between working on expensive computer/console games for gamers, and creating applications playable by the average consumer. Although graphics improvement is clearly led by technology progress, the development of innovative application is the result of the evolution of social interactions supported by technology, as discussed in the theory of technology (Dovey & Kennedy, 2006).

Evolution of technology is serving both the gamers, through the enhancement of their gaming experience, and people who are not used to play on a regular basis, through the social features of new forms of gaming. Therefore, this advancement has contributed to enlarge the panel of video game enthusiasts.

**New Types of Gaming**

Video game consumers have become “users” as opposed to “viewers/readers” (Dovey & Kennedy, 2006). Up until five years ago, we could split them into three categories. First, the gamers, who enjoy and play video games on a regular basis. Second, the hardcore gamers, who demonstrate a high involvement in playing video games and can spend hours trying to improve their score on the exact same level. Finally, the pro-gamers

\textsuperscript{18} http://www.steampowered.com/steamworks/FAQ.php#Business
motivated by competition. They have emerged along with the first e-sport events and earn their life playing video games. However, the combined emergence of new technologies and dematerialisation resulted in the appearance of new clusters.

Casual gamers are a new type of players that arose with the Facebook and smartphone applications, such as Farmville or Angry Birds. These players are interested in video game that requires low involvement and easy access on short periods of time. Casual gaming facilitates the first contact with video games and largely contributes to hit new clusters of the population that were not attracted by video games before. Indeed, women are the bigger consumers of casual games and seniors start to demonstrate a certain enthusiasm for electronic entertainment (Pichon(AFJV), 2011). Although these new gamers are only interest in a specific type of games for the moment, casual gaming may be used as an entrance gate in the wide universe of video games.

Casual gaming could have substantial consequences on the digital entertainment industry: applications are easier and cheaper to develop than traditional video games and they do not need expensive marketing campaigns. Furthermore, casual games are a perfect illustration of dematerialisation and do not use physical distribution or retail shops.

Serious gaming promotes a new way to use video games, combining entertainment with serious purposes. Indeed, researchers realized that if complex combinations of buttons and skills could be assimilated by the gamers in order to finish a level, so could “useful” procedures. Therefore, video games could be used as therapeutic tools for certain mental disorders, such as autism, or as educating instruments (Pichon(AFJV), 2011). However, if video games content can influence consumers’ behaviour, serious gaming could rapidly become a major public policy issue that would certainly impede its growth.

These new types of gamers have also led the manufacturers to change their strategy. Indeed, modifications have been made on software and hardware, in order to capture these new customers.

Therefore, games have been made easier for beginners, with the possibility to customize the level of difficulty and even to skip some parts if the player cannot succeed. In addition, “useful” software has been one of Nintendo’s main strategies, with the release of games like Cerebral Academy or Wii Fit. Games are now designed to reach all types of audience, from the traditional gamer to the average housewife.

Hardware too, have been modified to please a new audience. Gamers’ consoles (PS3 and Xbox 360) include gamepads with complicated sets of buttons and joysticks, which usually take several hours to get used to. Such controllers are not really appealing for beginners and children cannot even hold them properly. Consequently, Nintendo came up with a more accessible and intuitive device, partly controlled through a motion captor, much more engaging than its rivals’. Shortly after, motion capture became an uprising strategy to increase gamers’ involvement. With the release of Kinect for the Xbox 360 and the Playstation Move for the PS3 in 2010, Microsoft and Sony obviously made their move to encroach the market share of Nintendo.

**Localisation**

Video games are vehicles of culture and tradition. For that reason, certain video games are only successful in different cultural circles and rarely cross...
the target region’s borders. Europe is culturally closer to the USA than to Japan because of their common roots. Therefore, only a few Western video games are successful in Japan. However, Japanese video games are more likely to be appreciated by Western cultures. That may be explained through the Japanese inclination for console games rather than computer games, as well as their preference for RPGs (Role-Playing Games) that are more often developed by Japanese publishers. (Lange, 2002)

The gaming industry is a global industry, in that it is influenced by economic and cultural forces, in a system where “the industry tries to have a global influence with a local appeal” (Jameson, 1998). Therefore, companies have developed localisation processes to maximize this global influence.

Localisation is a concept that describes “the practices of designing and marketing products that can be adapted to local markets, rather than forcing local cultures to adapt to foreign products” (Selfe & Hawisher, 2007). These practices include translation, subtitles, but also the modification of content that may limit the penetration of the game on a foreign market, such as cultural references or political opinions. For instance, Microsoft has created a database, the GPS, in order to monitor culturally and politically sensitive topics on the worldwide market.

However, if the process seems easy in theory, the reality is somewhat different. First, the financial costs involved in localizing the products are significant, in that they include translators’ salary as well as extra programming costs for each market. Second, localisation can alter the integrity of the original game content and impact on the overall script. Finally, developers’ will to design a game for a global audience may eventually impact on their creativity. Moreover, developing software in regards with a list of restrictions can be frustrating (Selfe & Hawisher, 2007).

For instance, references to American specific cultural aspects are common in Hollywood movies. However, foreign audiences may not have in-depth knowledge of the American TV broadcasts. Therefore, references to Jerry Springer or David Letterman would be meaningless out of the USA. These names will be changed into something that carries similar connotations to fit local audiences.

Likewise, play on words cannot be directly translated from one country to another. Subtitles or dubbing will convert them into something equivalent, in regards with the local language codes.

Localisation allows manufacturers to reach their customers globally, to extend their influence to new markets, and to realize consequent economies of scale. On the other hand, it may be an expensive and dangerous move if the localisation process omits updated features of the foreign cultures it attempts to target.

The gaming industry has moved from a subcultural activity to become a part of the popular culture (Hjorth & Chan, 2009). In the first part, we have shown that the past shifts of the industry as well as the emergence of new markets can be explained through the combination of different theories, with an emphasis on Porter’s Diamond and cross-sectoral skill transfer. In the second part, we have reviewed the role of each entity of the supply chain and the challenges they are facing with the current trends of the sector. The internet has been a major factor of change in the industry, impacting on the market share of physical distributors and traditional retailers. Finally, we have considered four of the main transformations that occurred in the global
market. These mutations are eventually going to lead toward new gaming cultures, and possibly to the appearance of new actors.

Indeed, given the fierce competition that the main publishers are leading and the free circulation of digital content and ideas across borders, we argue that emerging markets are the one that bring something new to the video game industry. In fact, the South Korean market has flourished through the development of online computer games, as opposed to the Japanese game console influence. Although it could become controversial, serious gaming offers great opportunities for further exploration. With their psychological expertise combined with their technical skills, German developers would be an ideal starting point for this market niche.

The video game industry is different from the others because they wish to keep cultural differences. Ubisoft for example has several subsidiaries implanted in distinct market, such as Romania, Brazil and Canada, aside from its headquarters in France. Along with the primary benefits of entrance gates on the worldwide markets, Ubisoft also enjoys diverse cultural influences that greatly impacts on their creativity. Therefore, we argue that the Creative destruction is not relevant to explain the shifts of the video game industry. On the contrary, we believe that the emergence of new markets does not provoke the decline of the others, but contributes to captures new consumers. The best illustration is the appearance of casual gaming on new communication platforms, such as Facebook and the Iphone. As discussed above, this new gaming culture mainly attracts women, who were largely under-represented in the gamer demographics. Therefore, the industry does not shift from one country to another: new markets emerge and encroach on the market share of established industries.

Nevertheless, globalization makes it harder for new markets to emerge. Indeed, going to work in another country has been made easier over the past decades, and the talents are logically attracted to the countries where the video game industry is already developed, in that they will obtain a better recognition as well as higher incomes (Nixon, 2003; Porter, 2008). This reality could be counteracted in the near future along with the lowering of entrance barriers for game development. Soon, the new orientations of the video game industry could promote the benefits of multi-culturally influenced software.

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