



## **Master in Business Administration**

Science4you, S.A.

*From educational toys to software and hardware devices*

**Pedro Carreira**

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# ABSTRACT

**Title:** Science4you, S.A. - From educational toys to software and hardware devices

**Author:** Pedro Manuel de Nóbrega Moita Coelho Carreira

The thesis that is hereby presented in the form of a case study aims to address the challenges faced by the Portuguese company Science4you, S.A., upon creating a new product line focusing technology products, particularly tablets and smartphones. The thesis is divided into three parts: case study, literature review and teaching notes which can be used as an educational tool in undergraduate or graduate programs.

Formed in 2008, Science4you, S.A. is a company dedicated to the development, production and marketing of toys, as well as birthday parties, holiday camps, training courses and scientific animation.

Despite not having carried out any market research in concrete, by the end of 2013, Science4you decided to develop a new line of technology products for children (tech4you). Such decision resulted from the company perception that the market lacked this kind of products, which target the needs of children and address parental concerns.

The business strategy followed by Science4you, and the analysis of the strategic option mentioned, constitute interesting topics for discussion which can be reviewed in a strategy course and supported by theoretical concepts proposed in the literature review.

The proposed reflection focuses primarily on the analysis and evaluation of the business strategy, including the strategic option of developing a new line of technology products, thus providing recommendations for alternative strategic paths for the future.

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# I. Case Study

## 1. INTRODUCTION

### *Growth is the watchword*

Since the creation of Science4you S.A. (S4Y) back in 2008, the CEO Miguel Pina Martins managed to achieve the dream of many young entrepreneurs. Being only 23 years old, he started a small toy company, reaching in 2013, a sales volume above € 3 million in Portugal and Spain together.

The market nature of educational toys, where S4Y competes, requires a constant release of new products and the adaptation of those products to the needs of a particularly difficult target that children represent. So far, the strategic moves of S4Y seem to be settled to succeed in this "game", being recognized internally and abroad (see exhibit 1). However, the arise of new technologies and a greater use by children, pose new challenges for the company. Miguel Martins says that more often, children have access to new technologies, which provides for the opportunity to develop tech products specially designed for children and parental concerns. Consequently, it is worth to understand a new product, redefine the business strategy (if necessary), and to acquire new resources and skills.

In fact, between December 2013, when S4Y introduced to the market its first tablet for children, and 2014, the company has focused its business strategy in the development of a new line of technological products.

### *An idea pulled out of the hat*

In January 2008 (in the midst of the European economic crisis), S4Y was born from the hands of Miguel Martins, fruit of a willingness to acquire freedom and professional independence, as well as the search for new challenges.

The company was the previous result of a final course project drawn between students. The course project was possible through a venture partnership between ISCTE business school and *Faculdade de Ciências da Universidade de Lisboa* (FCUL), which consisted in the creation of physical kits for schools and universities. On their side, students from FCUL contributed with their ideas and expertise for the product development, while students from ISCTE business school, focused on the development of business plans. After conducting a market analysis, the team of Miguel Martins decided to target the scientific kits to children.

## 2. THE COMPANY

Science4you S.A., asserts itself as a 100% Portuguese company, dedicated to the development, production and marketing of toys, as well as the secondary activities: birthday parties, holiday camps, training courses and scientific animations.

The core activity of the company consists in the development and commercialization of scientific educational toys for children with 3 to 12 years old, representing around 70% of the total volume of revenue earned by the company. The main products correspond to scientific kits, however, S4Y also develops other traditional toys included into different categories such as puzzles, quizzes, board games and 3D constructions. These scientific toys stand out for their educational and experimental component, advocating the concept of "learning by doing". The main intend of these toys is to teach children, in a playful way, scientific fields, ranging from physics and chemistry to renewable energy, meteorology, geology, among others (see exhibit 2).

Recently, the company has extended its products portfolio by creating a new line of technology related toys namely tablets, a smartphone for children and a video game called micro dinos, developed with NFC<sup>1</sup> technology, where children perform virtual battles through a tablet or smartphone by connecting a dinosaur toy with the device. The children also need to complete educational virtual puzzles and quizzes in order to improve to next levels.

In addition, the company has created a set of free educational mobile applications (apps) such as Educational Games Words, Educational Games Mathematics and the Educational Mini-Games. These apps are available on Google Play, Windows Phone and the App Store, in three languages: Portuguese, Spanish and English.

The secondary activities represent around 10% of total revenue volume, while the tech4you product line currently weigh about 20% of the same indicator.

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<sup>1</sup> Near Field Communication

## 2.1. Mission, values and vision

The mission of S4Y is "To raise people's awareness for science and to show how it can be used in daily life, amongst children and society in general"<sup>2</sup>.

The company values are "Always ensure the Excellence, Commitment and Efficiency"<sup>3</sup>.

S4Y vision or meta-goal is "To improve education standards in society by developing toys and games that enable children to learn while playing"<sup>4</sup>.

## 2.2. Tangible and intangible resources

Currently S4Y has 20 stands at shopping malls across Portugal and has opened the first store during the present year 2014, in Forum Montijo. Until the end of 2014, the company plans to open 40 new stands in Portugal, 12 in Spain and 2 in the United Kingdom, in order to respond to the demand "boom" that arises during Christmas season<sup>5</sup>. Furthermore, the company also has subsidiaries in Spain and in the United Kingdom.

S4Y currently employs 100 people, with an average age of 28 years old, in the areas of management, marketing, design, biology, multimedia, psychology among others.

In 2014, the company has announced the intention to hire 200 new elements to strengthen its teams in Portugal (160), Spain (32) and the UK (8), in response to the opening of new spaces and to the higher demand generated by the Christmas season<sup>6</sup>, which contributes with 60% of total product sales<sup>7</sup>. In addition to shopkeepers, who represent the majority of the hiring, there are other vacancies for management positions as director of logistics, commercials and programmers. Besides those, there are still vacancies in the factories, says the CEO, Miguel Pina Martins<sup>8</sup>.

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<sup>2</sup> S4Y's mission. Available at: <http://www.science4youtoys.co.uk/about-us/company> [Accessed September 27th, 2014]

<sup>3</sup> S4Y's values. Available at: <http://www.science4you.pt/quem-somos/empresa> [Accessed September 27th, 2014]

<sup>4</sup> Ibid.

<sup>5</sup> Castro, C. (2014) *Science 4 You abre 200 vagas até ao Natal*, Económico Digital, 1 september.

Available at: [http://economico.sapo.pt/noticias/science-4-you-abre-200-vagas-ate-ao-natal\\_200548.html](http://economico.sapo.pt/noticias/science-4-you-abre-200-vagas-ate-ao-natal_200548.html) [Accessed September 27th, 2014].

<sup>6</sup> Mateus, C. (2014) *Contratar para criar emprego*, Expresso Emprego, 22 August. Available at: <http://expressoemprego.pt/noticias/contratar-para-criar-conhecimento/3514> [Accessed September 27th, 2014].

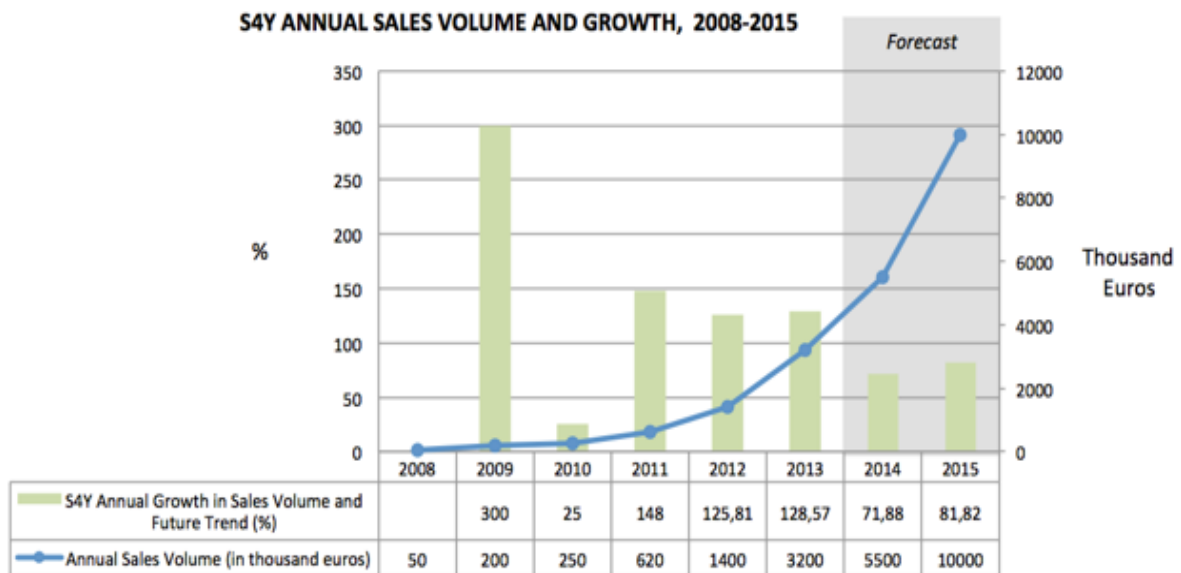
<sup>7</sup> Silva, A. R. (2013) *Num frio armazém no Prior Velho, não há mão a medir para fabricar brinquedos*, Público, 8 December. Available at: <http://www.publico.pt/portugal/noticia/num-frio-armazem-no-prior-velho-nao-ha-maos-a-medir-para-fabricar-brinquedos-1615182> [Accessed October 4th, 2014].

<sup>8</sup> Ibid.



### 2.3. Demand and Sales growth

Since its existence, year after year, S4Y has managed to significantly increase its sales volume achieving a remarkable growth. From its existence in 2008 until the past year of 2013, the sales volume of the company grew from € 50k to € 3,200k, representing a total increase of 6300%, in 5 years.



Source: <https://www.youtube.com/watch?v=X6UKuowHMY#t=111>  
Science4you Presentation Venture/ Author analysis

### 2.4. Short and medium term goals

For 2014, S4Y hopes to achieve a total sales volume of 5.5 million Euros, in which half of the sales are to be obtained in the international markets<sup>9</sup>. The company wants to continue its internationalization strategy by entering in the Germany market and to improve and internationalize its line of technological products to other countries rather than Portugal, Spain and the UK, where they are currently being sold. S4Y also expects to earn a turnover between € 1 million and € 2 millions, with the technology product line<sup>10</sup>.

### 2.5. Partnerships

In addition to the partnership maintained with *Faculdade de Ciência de Lisboa* where, in fact, are S4Y headquarters, the company has partnerships with other universities which are also oriented to science, namely *Universidad Autónoma de Madrid*, in Spain, and the *University of*

<sup>9</sup> Lusa. (2014). *Science4you quer duplicar receitas pelo segundo ano consecutivo*, RTP notícias, 23 January. Available at: <http://www.rtp.pt/noticias/index.php?article=711784&tm=6&layout=121&visual=49> [Accessed October 4th, 2014].

<sup>10</sup> (2014) *Reportagem: Micro Dinos da Science4You*, Exame Informática, 12 October. Available at: <http://exameinformatica.sapo.pt/videos/reporterei/2014-10-12-Reportagem-Micro-Dinos-da-Science4You> [Accessed October 17th, 2014].

*Oxford* in the United Kingdom. These partnerships allow S4Y products to have a certificate from those universities, visible on the outside of the packaging, in the form of accreditation stamps, and to release product line versions with the name of those institutions (see exhibit 2 and 3).

Museums and other science-related institutions are also strategic partners. In Lisbon and Oporto we can identify Museu de Ciência da Universidade de Lisboa, Pavilhão do Conhecimento, Planetário - Centro de Ciência Viva do Porto, but there are others across the country (see exhibit 3). These partnerships are important since they offer, along with toy purchases, the possibility to issue discount vouchers for the entrance of children and families in museums and other institutions, with a value of 105€<sup>11</sup>.

## *2.6. Customer analysis*

Customers are grouped into two different categories, business-to-consumers (b2c) and business-to-business (b2b). In the first category, b2c, are included the final consumers, children from 3 to 12 years of age and their families. The preferred distribution channels for this type of customers are S4Y own stores, stands located in shopping malls and online trade, carried out through its website. In the second category, b2b, the company sells its products to major retailers, from supermarkets to bookstores to other toy stores, such as Continente, Jerónimo Martins, Sonae, Auchan, El Corte Inglés, Bertrand, Livraria Barata, Staples and Sr. Brinquedo. Between all, the b2b category is the one with the highest weight in total sales volume, accounting for 37%.

## *2.7. The Supply Chain*

Toys and educational books are developed internally by the R & D department at the Tec Labs-Centro de Inovação, a scientific and technology incubator of FCUL. Despite having a R&D team, everyone can participate with their ideas for a new toy, from parents, to someone that saw an interesting idea in the international market or through ideas that emerge from S4Y secondary activities. S4Y currently has 300 product references, about 200 released in the last three years.

Normally, the R&D team tests the prototypes with children who have participated in S4Y activities, with their own sons or those from people they know. The team observes the experience taking detailed notes of child reactions, comments and difficulties throughout the process.

There are a lot of stages that the toy need to pass in order to be accepted for mass production, namely the quality of materials, production cost, adaptation to the target, receptivity during tests and community certifications in accordance with applicable legislation.

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<sup>11</sup> S4Y's product portfolio. Available at: <http://www.science4you.pt/catalogo-de-produtos> [Accessed October 4th, 2014].

Scientific - toy manuals usually take between two to four weeks to be completed, design and pagination about one week. Overall, a scientific kit can take two months to be completed, between the development of the idea to actual production<sup>12</sup>.

After the toy acceptance for mass production, S4Y contacts several suppliers to provide the components needed for toys manufacture. The criteria used for choosing its suppliers are based on both quality and cost. Furthermore, the company always tries to find Portuguese suppliers, in fact, between 60 to 70% of total production are made through Portuguese suppliers, resorting to external suppliers for electronic components. The company monitors the first production of their toys at the factory, whose amount of toys produced corresponds, on average, to 3000 units, and never less than 2000 units.<sup>13</sup>

The assembly of toys components is performed in a warehouse own by S4Y, located in an industrial zone, near Lisbon. The preparation of kits components and materials can take 40 minutes<sup>14</sup>. Moreover, the packaging and final preparation is also carried out internally, at the warehouse.

The distribution of the product is done by specialists that collaborate with S4Y, carrying the finished toys from the warehouse to all retail outlets in Portugal and abroad. Specialized toy stores, supermarkets and other small retailers, account for 37% of total sales volume, followed by S4Y own stores with a weight of 26% and online retail with 5%.

## *2.8. Internationalization Path*

From the moment S4Y was created, Miguel Pina Martins, knew that the Portuguese domestic market was too small to grow. For this reason, soon directed its corporate strategy towards internationalization and in 2010, the company incurred in a capital increase of € 100k, to ensure its entry into Brazilian and Angolan market.

S4Y currently has offices in Portugal, Spain and in the UK. Its products are sold to 14 countries worldwide including Brazil, Angola, Greece, Italy, France, Lithuania, Colombia, USA, Cyprus, Sweden and Venezuela.

In the medium term, the company aims to export its educational toys into new markets, such as Germany. In this market, there are some difficulties that S4Y must overcome according to Miguel Pina Martins, as the ones related with language, the market competitiveness, and the higher level of parent´s qualifications, which makes them even more demanding customers.

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<sup>12</sup> Silva, A. R. (2013) *Num frio armazém no Prior Velho, não há mão a medir para fabricar brinquedos*, Público, 8 December Available at: <http://www.publico.pt/portugal/noticia/num-frio-armazem-no-prior-velho-nao-ha-maos-a-medir-para-fabricar-brinquedos-1615182> [Accessed October 12th, 2014]

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

## 3. THE TOY INDUSTRY

### *3.1. Industry overview*

In 2011, global sales of traditional games and toys reached € 58 bn. Europe, United States, and China, hold the largest weight in the toy industry, representing a total retail sales of €15.8 bn, €14 bn and €4.8 bn, respectively. The trend points to an annual growth rate for this industry of 7.5% until 2016 (see exhibit 4 and 5).

The main European markets are the United Kingdom (UK), France, Germany, Italy and Spain. Most of the toys are imported from China and later sold in the western markets. In 2006, 89% of toys sold in the United States were imported, while 76% came from China. As for the European market, the percentage of imported toys that came from China was 85%.

While in Europe and United States, the toy market growth rate is slowing, in other parts of the world such as China, growth rates for traditional toys are higher than those of the respective economies. It should be noted that, in 2011, about 80% of the total European exports value was held within Europe itself.

### *3.2. Toy safety & counterfeit*

Among others, there are two relevant issues that have a strong impact on toy companies, especially SMEs<sup>15</sup>. The Toy Safety Directive (TSD) in Europe, which obliges manufactures, importers and suppliers to ensure that their products meet the requirements in terms of toy safety, including mechanical, physical and chemical safety. Companies need to provide required documentation and quality tests before releasing its products to the market. A simple test can cost between €150 and €300, while a more complicated can start in € 3,000 and go as high as € 10,000. Moreover, counterfeiting of toys represents another important issue. In 1998, the OECD<sup>16</sup> estimated that counterfeit toys represented 12% of the European toy market. According with the same report, the countries that most contributes for this situation are China and Turkey. Often, only the design of the product is copied and sold afterwards under a similar trademark, since the trademark was not copied, it makes it harder for those companies who hold a patent to defend themselves in court.

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<sup>15</sup> Small and Medium Sized Enterprises

<sup>16</sup> Organization for Economic Co-operation and Development

### *3.3. Market segments*

Toy industry is composed by an extensive range of products that can be included into 5 different categories<sup>17</sup> which are comprised in the Toy Safety Directive.

The scientific educational toys of S4Y belong to a niche market segment; however, the products can be included in the categories of construction toys, board games and puzzles as well as arts and crafts.

In 2011, Games and puzzles and infant and pre-school toys were the most popular toys in the EU9<sup>18</sup>. These most popular categories were followed by construction toys, dolls and accessories, and outdoor and sports toys (see exhibit 6). In the US the top selling categories were dolls and accessories with games and puzzles following behind in the second place. In China, plush toys were the most wanted, followed by Games and Puzzles also in second place (see exhibit 7).

Between 2010 and 2011, construction toys category was growing faster in terms of sales in EU countries, however, growth rates can differ across countries due to specific sales pattern, purchasing power or cultural characteristics.

### *3.4. Manufacture sector*

There is some divergence about the strategies used by each toy company related with the manufacture of its products. S4Y prefer to outsource the production of most toy pieces to Portuguese suppliers, however, there are other competitors who see more advantages in outsource or internally-produce offshore, as in China. S4Y can produce its toys in Europe, without losing, necessarily, the cost advantage. In fact, the production cost need to be weighted with transportation cost, and the flexibility needed to respond to a changing market, as explained by the CEO Miguel Pina Martins. Overall, production in Europe encompasses smaller plastic articles, where orders of these items are not sufficient to offset the shipping cost of producing in China. Items such as board games or puzzles, with lower market prices, ultimately fails to offset the shipping cost per unit, making more expensive for the final consumer.

In Europe, the sector of games and toys manufacturing accounts for about 5,300 enterprises, employing around 53,000 people (see exhibit 8). This sector is dominated by SMEs and self-employed, having 89% of companies between 0 and 9 employees on average. Czech Republic has the highest number of manufacture toy companies (see exhibit 9 and 10).

Margins in the manufacture sector are under pressure with long-term profit margins around 6% for the top 100 firms in terms of size. SMEs have a lower margin when compare with large

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<sup>17</sup> Dolls, infant and pre-school toys, construction toys, outdoor and sports toys, board games and puzzles and arts and craft toys. Games and Puzzles segment include among others, board games, any game played using cards or dice, excluding video games.

<sup>18</sup> Denmark, Finland, France, Germany, Italy, Norway, Spain, Sweden and UK

producers, as the median profit rate in the industry hovers around 2.5%. The median profit rate was about 1.1% in 2010. Although small firms had very low profits and even suffered losses in 2010, medium sized firms performed more or less in line with large firms.

### 3.5. Retail sector

The retail sector of toy industry is composed by small and big specialized stores, grocery retailers, electronics and appliance specialist retailers, online or direct retailers, among others.

In European markets, the most used retail channel is specialized toy shops followed by the grocery retailers. However, online retail has seen a strong growth, increasing its market share across many countries (see exhibit 11 and 12).

Although the number of large and very large companies in total distributors is significant small, they generate the highest amount of turnover (see exhibit 13).

Retail companies faced even lower margins in comparison with toy manufacture companies, as well as shorter peak sales periods. This results in more pressure for producers who see extended payment terms, having at the same time, great difficulties to finance itself.

### 3.6. Research & Development

Toy companies need to innovate constantly, making research and development (R&D) crucial for the competitiveness of toy companies. Nonetheless, R&D expenditures in the sector vary between 0.6% and 5.9% of total turnover (see exhibit 14). S4Y spends around 4% of total turnover in R&D, with an approximate value of € 200k by the end of 2014.

### 3.7. Competitors

Globally, the toy industry is dominated by three companies: Lego, Hasbro and Mattel. In 2011, in EU9, the combined market share for these firms was almost 27%.

<i>Company</i>	<i>Market Share in EU9</i>	<i>Sales in € million</i>
Mattel INC.	10.08%	1343.6
LEGO Group	8.32%	1108.5
Hasbro Inc	8.14%	1084.9

Source: Euromonitor

In addition to major companies in the traditional toy industry, there are many other smaller players which also compete with S4Y, being, in terms of its dimension and product portfolio, closer.

The direct competitors of S4Y in the niche market of scientific kits can be identified as Clementoni, 4M and Edu-science (see exhibit 15 and 16). There are other Portuguese players that produce educational toys such as Classic Toys (a brand created by the company Sabe),

Make2play and, until recently, Majora. In February 2012, Classic Toys and Make2Play have joined S4Y in the most prominent Toy Fair in Nuremberg, Germany<sup>19</sup> (see exhibit 16).

### *3.8. Industry outlook and trends*

Being a product directed to children, birth rates have a huge impact in the industry. In the two largest markets, United States and Europe, it is expected a stabilization in the number of children, conditioning this way the opportunities to grow in these markets. Furthermore, demographic policies against births as the "one-child" policy adopted by China since 1980s<sup>20</sup> also have a negative impact for the industry (see exhibit 17).

In another area, children are switching to more electronic products such as video games, tablets, smartphones and other devices to gain territory in the toy industry (see exhibit 18). In fact, the arise of cross-over toys, combining video games and mobile devices with traditional toys can represent opportunities for both traditional toys and video games industry. In the US 45% of parents report that they plan to buy, or already have bought, a mobile device to support their child's learning. Fifty-six percent of parents say they are willing to purchase a mobile device for their child to use in the classroom if the school required it. In fact, more than half of parents believe that schools should make more use of mobile devices in education. At the same time, many parents look to teachers and schools for guidance on helping children use mobiles and apps for educational purposes.

Children are also maturing at an earlier age, a phenomenon called Kids Getting Older Younger (KGOY)<sup>21</sup>, implying a shorter playing period and the redefinition of toys to children.

The recovery of the European economy and the United States, as well as the evolution of emerging economies raises enough uncertainty with regard to future predictions.

However, an external factor that is affecting positively the outlook for the traditional toys and games industry is the increase of purchasing power per kid, especially in emerging markets such as China.

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<sup>19</sup> Lusa. (2012) *Empresas portuguesas de brinquedos apostam em feira de Nuremberga para contrariar declínio da indústria*, SIC Notícias, 28 January. Available at: <http://sicnoticias.sapo.pt/economia/2012-01-28-empresas-portuguesas-de-brinquedos-apostam-em-feira-de-nuremberga-para-contrariar-declinio-da-industria> [Accessed October 16th, 2014].

<sup>20</sup> Moore, M. (2014) *What is China's one-child policy?*, The Telegraph, 30 October. Available at: <http://www.telegraph.co.uk/news/worldnews/asia/china/11197594/What-is-Chinas-one-child-policy.html> [Accessed November 4th, 2014].

<sup>21</sup> "It is the idea of marketing adult products or ideas to younger audiences." (Mitchell, 2008)

## 4. MOBILE DEVICES AND GAMES INDUSTRY

### 4.1. Industry overview

In the industry of mobile devices and games there are included, among others, tablets, smartphones and mobile applications (apps) that can be installed in these devices. However, there are other products that can also be seen as belonging to this industry, such as portable handheld consoles, laptops, and the games developed for them. This description will highlight the first product category (tablets, smartphones and applications), since S4Y began to take the first steps towards this direction.

In July 2012, Disney commissioned a survey of 2,000 British parents who owned an app-capable device and found that 75% share them with their children; 56% said they had downloaded an app at the request of their kids; and 37% considered apps to be an "integral" part of their family life<sup>22</sup>.

In the United States, in 2013, it is estimated that 35% of parents would play video games with their child at least once a week and 58% of parents would do so at least once a month<sup>23</sup>.

#### *Tablets*

In 2012, tablet revenue reached \$ 40.8 bn, and it is expected to increase to \$ 93.2 billions in 2017, noting a CAGR<sup>24</sup> of 18% during that time (see exhibit 19).

In terms of geographical scope, Europe, Russia and Turkey are expected to constitute the largest market, accounting for one-third of tablet demand, followed by North America and Asia. Middle East and Latin America will probably show the largest growth, with 50 million units by 2016.

#### *Smartphones*

As for smartphones sales, there are expected to grow at a CAGR of 14.2% during 2012-2017, reaching 923 million units (see exhibit 19). In contrast, over the same period, the revenues from laptops are likely to fall at a CAGR of 8.4%, reaching \$142.2 bn in 2017.

Europe leads US with 42% penetration in Smartphone segment; an increase of 13% over the previous year. In EU, Spain leads the penetrated market followed by the UK.

By 2017, China is expected to become the second largest market for smartphones, accounting for 20% of global shipments.

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<sup>22</sup> Dredge, S. (2012) *The 50 best children's apps for smartphones and tablets*, The Guardian, 4 August. Available at: <http://www.theguardian.com/technology/2012/aug/04/50-best-apps-children-smartphones-tablets> [Accessed October 25th, 2014].

<sup>23</sup>(2014) *Move over kids, it's Mom's turn to play!*, Mom Blog Society, 14 October. Available at: <http://momblogsociety.com/move-kids-moms-turn-play/> [Accessed October 25th, 2014].

<sup>24</sup>Compound Annual Growth Rate



### *Mobile Applications (apps)*

There were, in 2012, over 500,000 apps available on the Apple App Store, and an additional 300,000 in the Android market. Mobile app revenue is expected to generate \$ 38 bn by 2015.

In 2012, over 80% of the top selling paid apps in the Educational category of the iTunes store target children. In 2009, around 50% of top selling apps target preschool or elementary aged children, and in 2012 that number increase to 72%.

In 2012, the apps targeting toddlers/ preschoolers were the most popular ones, representing 58% of the app market share. General early learning represented the highest category by subject (47%), being significantly higher than the second most popular subject, math (13%).

Choosing the right app however, can be a problem, once big app stores such as Apple and Google do not have dedicated kid's categories, instead they are scattered between other categories such as entertainment, games, education and books. So, many apps tend to be spread by word of mouth among parents.

### *Operating system*

Of 227 countries, Android was the market leader in 135 countries, whereas Apple was the market leader in only 38 countries, including the U.S.<sup>25</sup> (see exhibit 20).

#### *4.2. Kids' market segment*

A recent study made by Ofcom, shows that, in 2014, in the UK, 34% of children between 5 and 15 years old, have their own tablet rather than using devices belonging to their parents or school, up from 19% in 2013.

Six in ten (62%) children use a tablet at home, which has risen by half in a year (42% in 2013).

A sharp increase in tablet ownership among very young children means that some are using one to surf the web, play games and watch video clips before they join school. More than one in 10 children aged 3-4 now have their own tablet (11%, up from 3% in 2013).

In America, among 5 to 8 years old children, TV is still the most used platform for educational content accounting for 59%, while 44% play educational games, apps or activities on a mobile device like a smartphone or tablet.

In EU9, around 46% of children between 9 and 16 years old own a smartphone and 41% use it daily, while 20% own a tablet and 23% use it in a daily basis.

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<sup>25</sup> Mahapatra, L. (2013). *Android Vs. iOS: What's The Most Popular Mobile Operating System In Your Country?* International Business Times, 11 November. Available at: <http://www.ibtimes.com/android-vs-ios-whats-most-popular-mobile-operating-system-your-country-1464892> [Accessed November 8th, 2014].

### *4.3. Risks for kids*

A study made by the London School of Economics, in 2011, found that 41% of all European children between the age of 9 and 16 have experienced one or more risk factors online including sexual images, unwanted messages or cyber-bulling and 12% of all children were “truly bothered” by these experiences.

Parental controls need to be user-friendly and flexible in terms of settings and functionalities, and tailored to children needs, so as to be perceived as helpful resources rather than invasive tools.

In UK, parents as well as children attend internet safety sessions at schools, along with internet safety campaigns; these provide essential information for parents to manage their children’s safe internet use. Nearly half of children say their parents do use parental control monitoring and filtering software.

Nowadays, parents can also download free applications that allow them to control the use of a mobile device by children; however, many features of these apps can only be accessed through a payment fee<sup>26</sup>.

### *4.4. Customers*

The cost of the device is an important criteria for parents, they also evaluate the cost of mobile plans, technical constraints and the availability of WiFi connection. Some parents use the device to contact more often with their children. Parents also look more for the educational content of the apps.

On their turn, children value more the design/fashionable part of the device, rather than the hardware or software specifications. The apps need to be dynamic and interactive, without being too complex. Entertainment is the most valued criteria for children as well as privacy and convenience, in particular for older children.

### *4.5. Competitors in the kids market segment*

Although there are no smartphones designed specifically for children, being S4Y a pioneer in this type of product, there are many other companies producing tablets for children, some of them being specialists. Major companies in Portugal and worldwide for tablets include Sunstech, Clementoni, Lexibook, LeapFrog, Samsung and Toys R Us own tablet brand, Tabeo Its products can be found in FNAC or Toys R Us, for example (see exhibit 21 and 22).

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<sup>26</sup> Bogart, N. (2014) *Top apps that give parents control over kids screen time*, Global News, 9 July. Available at: <http://globalnews.ca/news/1441624/top-apps-that-give-parents-control-over-kids-screen-time/> [Accessed October 25th, 2014].

#### *4.6. Conclusion*

Traditional toy industry is very competitive, the product life cycle is short and consumers are very demanding. Therefore, companies need to launch new products on a constant basis, following industry trends and consumer preferences, focusing on costs and differentiation. This requires companies to make investments in R&D, to maximize production efficiency and distribution, while carrying out marketing campaigns and partnerships, to promote its brand image.

S4Y has managed to keep up with consumer preferences by launching new products constantly, setting prices equal or lower than those of competitors, using domestic suppliers and partnerships with universities, accessing to skilled employees, taking advantage of its facilities, and accreditation of its toys.

Its internationalization strategy has shown very positive results in its sales volume, as S4Y expands to foreign markets by partnering with major retailers and universities.

Currently, traditional toys had recorded a significantly higher growth in emerging markets than in Western economies, making them attractive. However, to make the most for this opportunity, S4Y needs to make a set of internal changes, notably at its organizational structure and logistics which are very centralized, its human resources, legal protection and the accomplishment of partnerships as well as other investments on assets.

On the other side, the technology development and growing interest from children for software and hardware devices, allow traditional toy companies to diversify its product range into tech toys, thus fighting the trend of more mature Western markets. S4Y has been making investments to compete in this area, increasing its human resources, and developing videogames, mobile devices and applications. But is this enough? How can S4Y have a sustainable competitive advantage in these technology toys for children? And should the company follow this path or focus in traditional toys?

## II. EXHIBITS

### THE COMPANY

#### Exhibit 1 - S4Y Awards

Science4you, S.A. major awards	
National Awards	International Awards
2014: Medalha de Mérito Empresarial, pela Câmara Municipal de Loures	2013: Prémio Business Internationalization Award by the <i>british</i> government.
2014: Prémio Líder na Categoria Empreendedorismo, LIDE Portugal	Prémio de Empreendedor do Ano 2010 (Comissão Europeia).
2014: Portugal Ventures - Start Up of the Year	
2013: Prémios Time Out Lisboa, na categoria de Marca do Ano.	
2013: Prémio Excelência no Trabalho (Heidrick & Struggles).	
Prémio Empreendedor nos Prémios Novos 2013, na Categoria de Empreendedor.	
2011: 1º Prémio da European Enterprise Awards na Categoria de Internacionalização a nível Nacional.	
Prémio Empreendedor Finicia Jovem 2009 IAPMEI.	

Source: Science4you, S.A. website.  
Available at:  
<http://www.science4you.pt/quem-somos/science4you-premios> [Accessed September 27th, 2014]

#### Exhibit 2 - S4Y Product Portfolio (Non exhaustive)



Source: Science4you website.  
Available at:  
<http://www.science4you.pt/catalogo-de-produtos> [Accessed September 27th, 2014]

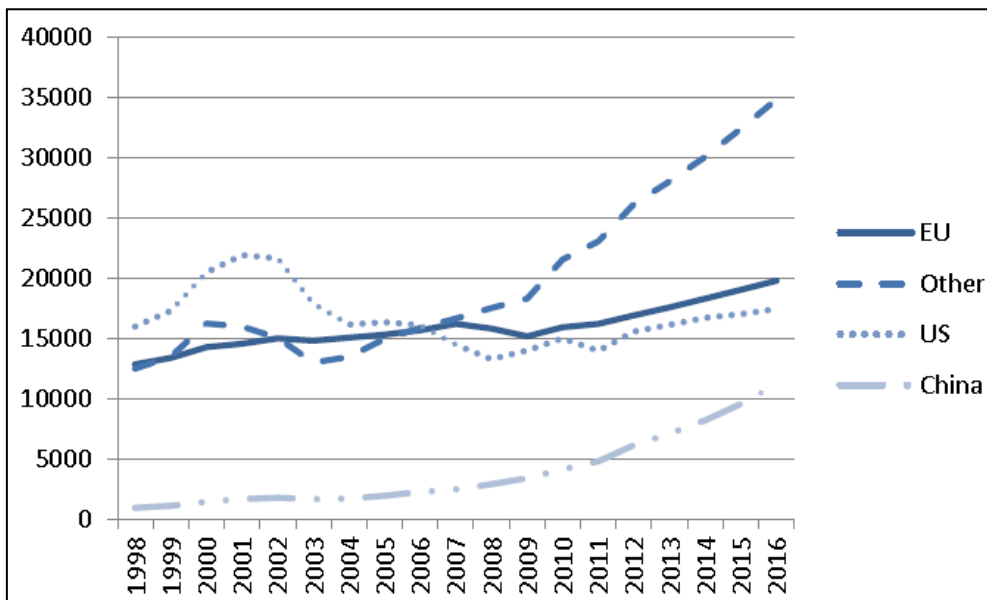
### Exhibit 3 - S4Y Partnerships (Non exhaustive)

Partnerships		
Universities	Science Related Museums	Other partnerships
Faculdade de Ciências da Universidade de Lisboa	Pavilhão do Conhecimento	Parque Científico de Madrid
Universidad Autónoma de Madrid	Museu da Ciência da Universidade de Coimbra	CARRIS
University of Oxford	Centro de Ciência Viva do Algarve	ISCTE-IUL
	Planetário Centro de Ciência Viva do Porto	SONAE
	Museu da Lourinhã	BARCLAYS
	Centro Ciência Viva do Algarve	FNAC KIDS
		ERICSSON
		DA VINCI
		EDUCATE

Source: Science4you website.  
Available at:  
<http://www.science4you.pt/quem-somos/parcerias> [Accessed September 27th, 2014]

## THE TOY INDUSTRY

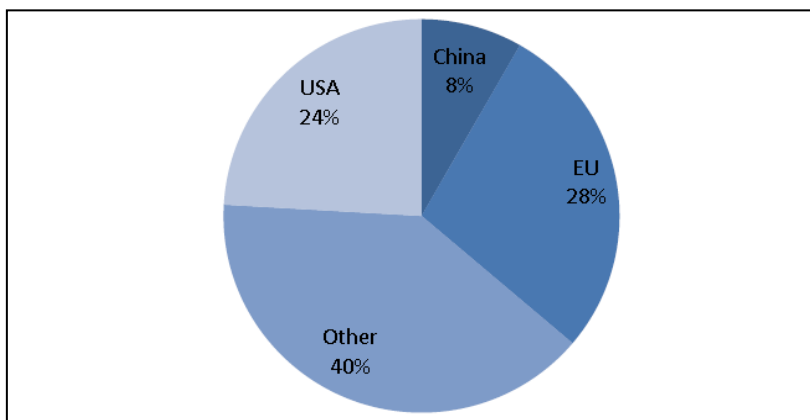
### Exhibit 4 - Sales evolution of traditional games and toys



Source: ECSIP consortium (2013).  
Study on the competitiveness of the toy industry, Final Report.

Source: Euromonitor estimates and projections. Note: Values for the EU are based on Euromonitor data and own calculations

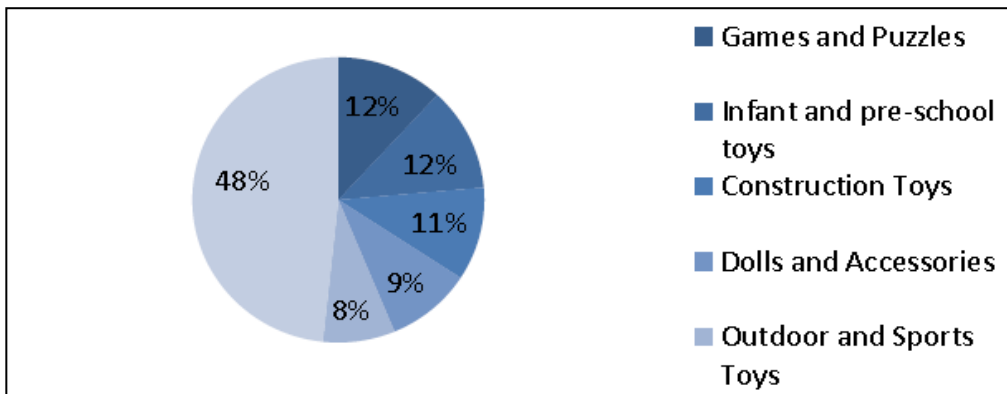
### Exhibit 5 - Sales evolution of traditional games and toys by country, 2011



Source: ECSIP consortium (2013).  
Study on the competitiveness of the toy industry, Final Report.

Source: Euromonitor; Ecorys estimates. The EU total here includes Croatia and Switzerland.

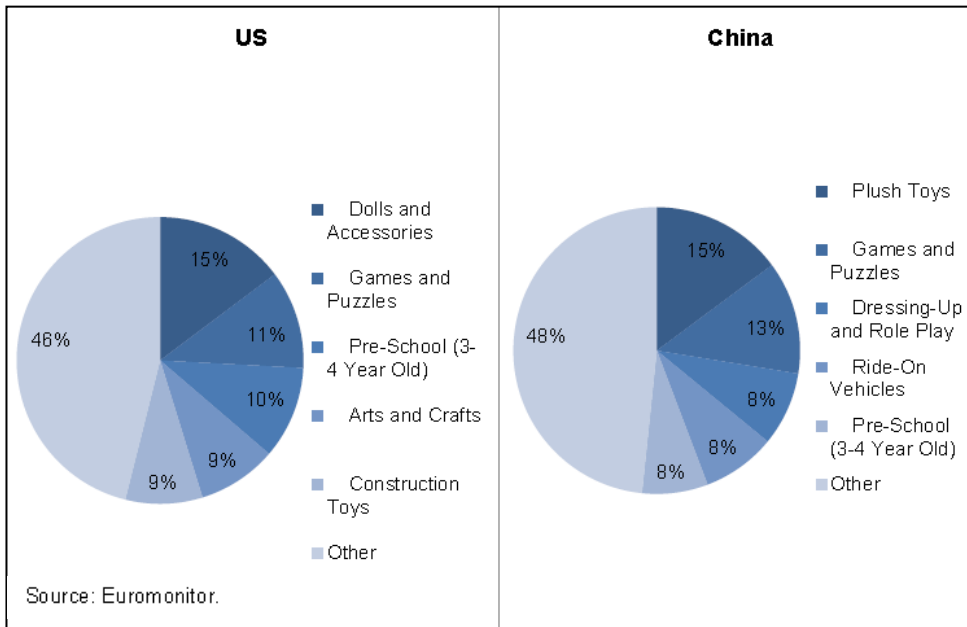
**Exhibit 6 - Sales of traditional toys and games by category in EU9, 2011**



Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

Source: Euromonitor. Note: the nine EU markets represented here are France, Germany, Italy, the Netherlands, Spain, Sweden, UK, Poland, and Romania.

**Exhibit 7 - Sales evolution of traditional games and toys by country, 2011**



Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

**Exhibit 8 - Manufacture of games and toys: Key indicators for EU27 - share of total manufacturing in parentheses**

Indicator	NACE 2	2004	2008	2009	2010
Number of enterprises	Manufacture of games and toys	6,600 (0.28%)	5,213 (0.25%)	7,846 <sup>10</sup> (0.38%)	5,330 (0.25%)
Turnover	Manufacture of games and toys	7,000 (0.11%)	7,869.16 (0.11%)	-	-
Number of persons employed	Manufacture of games and toys	67,100 (0.18%)	-	52,000 (0.17%)	53,000 (0.18%)
Value added at factor cost in production value (%)	Manufacture of games and toys (manufacturing total)	35 (28.53)	40 (26)	40 (27)	40 (-)

Source: Eurostat SBS. Notes: '-' means no data available; share in / value of manufacturing total in parentheses.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

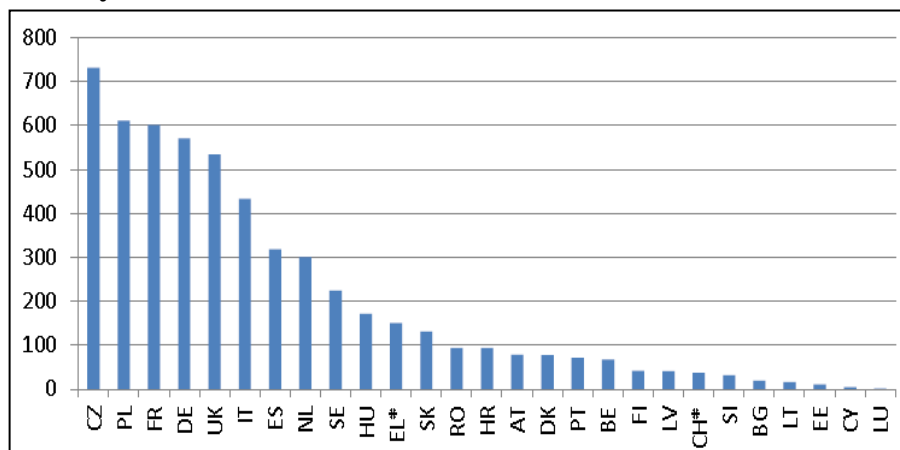
**Exhibit 9 - Share of employment and number of enterprises by company size class, EU27, 2010**

	Manufacturing		Manufacturing of games and toys	
	Number of enterprises	Number of persons employed	Number of enterprises	Number of persons employed
From 0 to 9 persons employed – micro	82%	14%	84%	16%
From 10 to 49 persons employed – small	14%	21%	14%	18%
From 50 to 249 persons employed – medium	3%	25%	2%	27%
250 persons employed or more – large	1%	40%	1%	39%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Eurostat SBS; numbers presented may not add exactly to 100% due to rounding. Note: Total number of enterprises in Games and Toys taken from SBS Annual detailed enterprise statistics for industry, for NACE 32.4. Other figures needed for calculations taken from SBS Industry by employment size classes.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry*. Final Report.

**Exhibit 10 - Manufacture of games and toys: number of enterprises, breakdown by country**



Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry*, Final

Source: Eurostat SBS. Note: \* data for 2009 (EL and CH). Data missing for Malta, Luxembourg, Ireland.

**Exhibit 11 - Retail sale of games and toys in specialized stores: Key indicators for the EU27 (Share of retail trade in parentheses)**

Indicator	NACE 2	2008	2009	2010
Number of enterprises	Retail sale of games and toys in specialized stores	18,485	18,293	19,129
		0.50%	0.51%	0.52%
Turnover (in € million)	Retail sale of games and toys in specialized stores	12,009.56	11,873.35	12,265.11
		0.46%	0.48%	0.47%
Number of persons employed	Retail sale of games and toys in specialized stores	89,600	97,000	101,800
		0.49%	0.53%	0.55%

Source: Eurostat.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry*, Final Report.

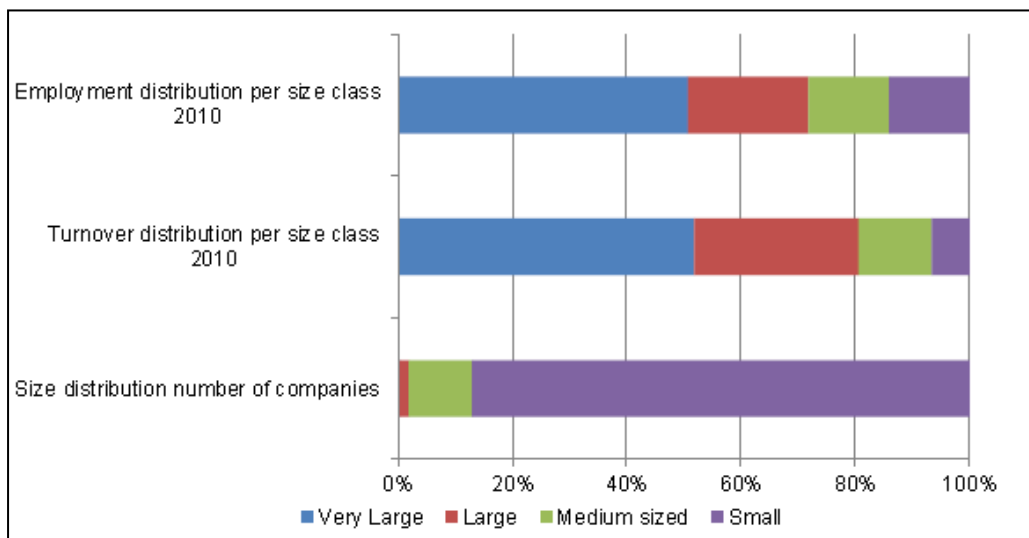
**Exhibit 12 - Retail sale of games and toys in specialized stores: Key indicators for the EU27 (Share of retail trade in parentheses)**

	UK	France	Germany	Italy	Spain <sup>*</sup>
Grocery retailers	28,8%	40,7%	12,4%	33,0%	23,1%
Electronics and Appliance specialist retailers	2,2%	n/a	1,0%	n/a	n/a
Mixed retailers	13,4%	1,3%	11,7%	7,0%	25,5%
Leisure and Personal Goods specialist retailers	37,6%	46,5%	46,1%	57,8%	44,0%
- Traditional toys and games store	28,6%	45,4%	41,2%	50,4%	40,0%
- Media product stores	1,8%	n/a	0,6%	1,3%	n/a
- Others	7,2%	1,1%	4,3%	6,1%	4%
Other non-grocery retailers	0,5%	0,6%	6,7%	n/a	2,7%
Vending	0,1%	0,1%	0,4%	0%	n/a
Homeshopping	0,8%	0,1%	1,4%	0,1%	0,4%
Internet retailing	16,1%	10%	15,6%	2,1%	4,0%
Direct selling	0,4%	0,1%	3,5%	0%	0,3%
Other	0,1%	0,6%	1,2%	0%	0%
<b>Total</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

Source: Euromonitor (June 2013). Note: n/a stands for not applicable or negligible; \*: The share reported for internet retail in Spain was considered too high by the Spanish Toy Association, which indicated that a share of 0.5% is more realistic. This value can also be found in Regioplan (2012), referring to NPD data as source. Upon consultation, Euromonitor indicated that their estimate is based on secondary data for the rise of internet retail in consumer goods, cross checked on the basis of interviews with key actors in the Spanish toy market.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

**Exhibit 13 - EU toy distributor statistics, 2012**



Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*



**Exhibit 14 - R&D expenditures in Manufacture of games and toys, as percentage of total turnover**

Country	2007
Czech Republic	0.6 %
Germany	1.7 %
Spain	2.6 %
Austria	5.9 %
United Kingdom	1.6 %

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

**Exhibit 15 - Price comparison of educational toys: S4Y vs. Direct Competitors (non exhaustive)**

Company	Product	Price	Place
S4Y	Química 1000	19.99 €	Fnac
Clementoni	Química em Casa	25.99 €	Fnac
Edu Science	Super Set de Química	29.99 €	Toys r Us
S4Y	Vulcões	9.99 €	Fnac
4M	Kit Vulcão - Experiências	10.53 €	Fnac
S4Y	Cozinha com Ciência	19.99 €	Fnac
Clementoni	Laboratório de Cozinha	24.99 €	Fnac
S4Y	Escavação de Fósseis: T-Rex	9.99 €	Fnac
Classic toys	Kit de Escavação - Tyranosaurus Rex	12.95 €	Fnac
Clementoni	O Regresso do T-Rex	21.99 €	Fnac
Edu-Science	Esqueleto T-Rex	34.99€	Toys r Us
S4Y	Estufa Ecológica	19.99 €	Fnac
Classic toys	A Minha Primeira Horta em Casa	24.95 €	Fnac
Clementoni	A Ciência na Estufa	24.99 €	Fnac
S4Y	Gerador Eólico	9.99 €	Fnac
4M	Gerador Eólico	14.95 €	Fnac

Source: Fnac and Toys R us website. Available at: <http://www.fnac.pt/> & <http://www.toysrus.pt/> [Accessed November 8th, 2014]

*Note:* All S4Y products mentioned include 13 entrance tickets in various museums and science centers, with a maximum amount of 105 €, and given with the purchase of another ticket of equal or lower value.

**Exhibit 16 - S4Y Competitors profile for traditional toys**

*LEGO*

LEGO is a family-owned toy company based in Denmark. It is world famous for its brick pieces, competing in the market segment of construction toys.

Recently, the company started to invest in the diversification of its product-portfolio, with the release of "The LEGO® Movie", a new line of NFC toys called Lego® Ultra Agents, enabling children to interact with real and virtual mini figures through a free application available for Windows Phone, iOS and Android devices. It also presented to the market a new line of special bricks called Lego® Fusion, making physical bricks to gain a virtual life on mobile devices.

Lego has license agreements for the commercialization of mini figures related with Marvel, Star Wars and Disney characters.

The company manufactures its toys near markets where it sells its products, mainly in Europe<sup>27</sup>. In March 2013, the LEGO Group announced plans to build a manufacturing facility in China, supplying exclusively the Asian market.

The average number of full-time employee was 11,755 in 2013. More than 180 designers from 28 countries compose the creative core Management's review. The product development is mainly based at the company headquarters in Denmark. In 2013, the company spent about 1.78% of total turnover in R&D, with an approximate value of €60.6 million by the end of 2013.

### *Mattel*

Mattel is an American based company, and probably its most known product is Barbie®. Despite dolls, Mattel offers a diverse range of products for children in all age categories and gender, including toys for infants and pre-schoolers, girl's and boy's toys, youth electronics, hand-held devices, puzzles, educational toys, media-driven products and fashion-related toys. The company also has different mobile apps for smartphones and tablets available at the App Store, Google Play and Amazon, most of these apps are free.

Recently, the company has created a specific line of products belonging to Appitivity, enabling children to play with Mattel's iconic brands with NFC technology.

Product design and development activities are mainly conducted by professional engineers and designers employed by Mattel. During 2013 Mattel incurred expenses of about €144 million in R&D, equivalent to an approximate 2.89% of total turnover. Mattel also pays to independent toy designers and developers which contribute with new concepts and products, receiving royalties for that.

In 2013, Mattel had more than € 690 million in net income, employing nearly 30,000 people in offices across 40 countries and selling its products for over 150 markets.

Most of core products are produced in company-owned factories, using outsource production for non-core products. Its major factories are located in China, Indonesia, Malaysia, Mexico and Thailand.

The company also has license agreements with Disney and Marvel, among others.

### *Hasbro*

You probably recognize Hasbro from products like Furby® or Monopoly®. Hasbro is an American based company with a vast product portfolio, from the production of toys and games to television programming, motion pictures, video games, and an extended license program, having over 1,500 brands.

Recently, Hasbro has acquired 70% of Back Flip Studios, a mobile game development company<sup>28</sup>.

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<sup>27</sup> Czech Republic and Hungary.

In 2013, the expenses related with product development, were around €159 M, with an approximate value of 5.09% in 2013. Most of the work is done internally; however, the company also pays royalties to independent designers.

During 2013, practically all products were manufactured in the Far East, primarily in China, but also in its two-owned factories in the US and in Ireland.

At December 2013 the company had around 5,000 employees worldwide.

The company has partnerships with Disney, Marvel and Star Wars.

In 2013, Hasbro sold its products across Europe, Latin America and Asia Pacific. Emerging market revenues grew 25% to about €442 million, equivalent to approximate 14% of Hasbro global revenues.

### *Clementoni*

Clementoni is an Italian based toy company that develops and manufactures toys and electronic educational games for children.

The company offers products in the areas of cubes, educational games, computer, scientific games, art and craft, as well as puzzles.

The software used in Clementoni's tablets allows parents to control its children access to the internet via "Clem Browser", limiting the access of children to certain web pages that are constantly controlled and certified by Clementoni. Parents can also control the limit of time that children can play with their tablet daily. The software used is the first to allow parents to manage the content and monitor at same time its children progress. The educational application games can be downloaded from the Google Play Store, however, Clementoni has its own educational applications from Edu Books, where it can be download educational books for children and from the Clem Channel. Parents can monitor the development of children knowledge in 5 different areas (communication and language, mathematic, logic, creativity and manual dexterity as well as knowledge of the world and yourself), linked to each educational application, and improve it, by downloading recommended applications from Clementoni.

Most of the product development and quality assessment is done internally, in Italy.

In 2012, with the creation of Clementoni UK subsidiary, the company subcontracted Import Services, as its logistics partner<sup>29</sup>. The company has subsidiaries in the UK, Hong Kong, France, Germany and Spain, exporting its products mainly to the USA, Latin America, Canada, Russia, Middle East, Far East and Africa and it sells its products through agents and distributors<sup>30</sup>. In 2011, Clementoni had sales of more than € 130 million<sup>31</sup>.

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<sup>28</sup> Cutler, K. (2013) *Hasbro Takes A 70% Stake In Mobile Game Maker Backflip Studios For \$112M*, Tech Crunch, 8 July. Available at: <http://techcrunch.com/2013/07/08/hasbro-backflip/> [Accessed October 4th, 2014].

<sup>29</sup> UKWA (2012) *Italian Job*. Available at: <http://www.ukwa.org.uk/news/italian-job/402/> [Accessed October 4th, 2014].

<sup>30</sup> Clementoni's website. Available at: <http://www.clementoni.com/en/area-trade#exportarea> [Accessed October 4th, 2014].

<sup>31</sup> UKWA (2012) *Game on for Clementoni!* Available at: <http://www.ukwa.org.uk/news-events/news/ukwa-news/1/game-on-for-clementoni/406/> [Accessed October 4th, 2014].

## 4M

Created in 1993, 4M Industrial Development Limited is a Hong-Kong based company which produces educational toys divided into scientific kits and arts & crafts<sup>32</sup>. Its sales network covers more than 70 countries and the brand is registered as a trademark in more than 60 countries<sup>33</sup>. The company and its products have been awarded in different markets such as, in the USA (Parent's and Teacher's Choice and Best Green Product 2012&2013), Germany, Brazil, UK and Canada. 4M is an innovative company, releasing 30 new toys per year to the market.

## *Edu-Science*

Edu-Science (HK) Limited is another Hong-Kong based company which produces educational and experimental toys such as scientific kits for children, electronic toys, board games, construction sets, and arts and crafts, among others.

Edu-Science has more than 3000 employees and showrooms, offices and warehouses in the United States and Germany<sup>34</sup>. Its design team is experienced in mechanical and electronic design and the management team is opened, dynamic and multicultural<sup>35</sup>.

The company exports its products worldwide through partnerships with local producers for the distribution of its products<sup>36</sup>. Edu-Science has licenses for the production and distribution of global brands like National Geographic, across Asian markets and worldwide.

## *Classic Toys*

Classic Toys® is a brand created in 2004 by the Portuguese company Sabe. Its toys are made for children of any age and in different toy segments including dolls, educational games, puzzles, assembling kits, construction toys, among others, with over 500 products.

Toys are developed and manufactured in Portugal and the brand is sold in Portugal and Spain, having a partnership with ColorAdd<sup>®37</sup>.

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<sup>32</sup> 4M's website. Available at: <http://www.4m-ind.com/about.php> [Accessed 24th October, 2014].

<sup>33</sup> Enterprising Hong Kong Awards, (2014). Available at: [http://enterprisinghk.scmp.com/en/finalist\\_popup.asp?Candidate=Y](http://enterprisinghk.scmp.com/en/finalist_popup.asp?Candidate=Y)

<sup>34</sup> Trade2CN, (2011). *Edu-Science (H.K.) Co., Ltd.* Available at:

<http://www.trade2cn.com/companyShop/556517/aboutUs.html%3Bjsessionid=65734B27ECBCB25D125FB5698CB00074?0> [Accessed 24th October, 2014].

<sup>35</sup> Made-in-China, (2011). *Edu-Science (H. K. ) Company Limited.* Available at: <http://www.made-in-china.com/showroom/20071014/companyinfo/Edu-Science-H-K-Company-Limited.html> [Accessed 25th October, 2014].

<sup>36</sup> Elenco's website. Available at: [http://www.elenco.com/about\\_us/pressdetail/2](http://www.elenco.com/about_us/pressdetail/2) [Accessed 24th October, 2014].

<sup>37</sup> Classic toys' website. Available at: <http://www.classictoys.com.pt/brinquedos/quem-somos> [Accessed 24th October, 2014].

### *Make2Play*

Make2Play® is a Portuguese brand from the company Be-a-Ba, which develops and sells scientific educational toys<sup>38</sup>. The main characteristic of its products is originality and authenticity. In total, the company has around 30 prototypes<sup>39</sup>.

Based in Lisbon, Portugal, Make2Play educational games are part of Do It Yourself (DIY) building kits, part toys. Toys have to be made before they can be played, children can learn to focus, experimentation, patience and accomplishment while assembling toys. The kits target children with 6 and more years of age, and they include instructions and concepts related with engineering and biology.

The design, development and prototype is made in Portugal as the quality tests, while products are manufacture in China and sold in Europe, the USA and Japan<sup>40</sup>. Products are sold through retailers or local wholesaler partners.

### *Majora*

Many Portuguese know Majora because of toys like Mikado® or Sabichão®, and from other games such as Monopoly® (licensed and adapted to Portugal). For the last 7 decades, the company has created over 300 games and toys, such as puzzles, infant pre-school toys, books and others. However, in February 2013, Majora ended its production<sup>41</sup>.

The company had its own factory in Portugal, but with time, most of manufacture toys began to come from China. In 1968, a new factory was built in Oporto industrial area, it invested in machinery and people, around 130 employees.<sup>42</sup> Some components were made in Oporto and Gaia, while others came from Germany. Since 1960 the company made license agreements with Disney and TV characters such as Hello Kitty and Ruca. The company even internationalizes to Spain and in 2010 it created a new product line targeting senior people.

In 2012, the company introduced to the market a mobile application of its traditional game Sabichão® which is still available at the App Store.

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<sup>38</sup> Briefing, (2011). *Be-a-Ba cria marca portuguesa Make2Play*. Available at: <http://www.briefing.pt/marketing/11352-be-a-ba-cria-marca-a-marca-portuguesa-make2play.html#ixzz3JXxXBkJF> [Accessed 25th October, 2014].

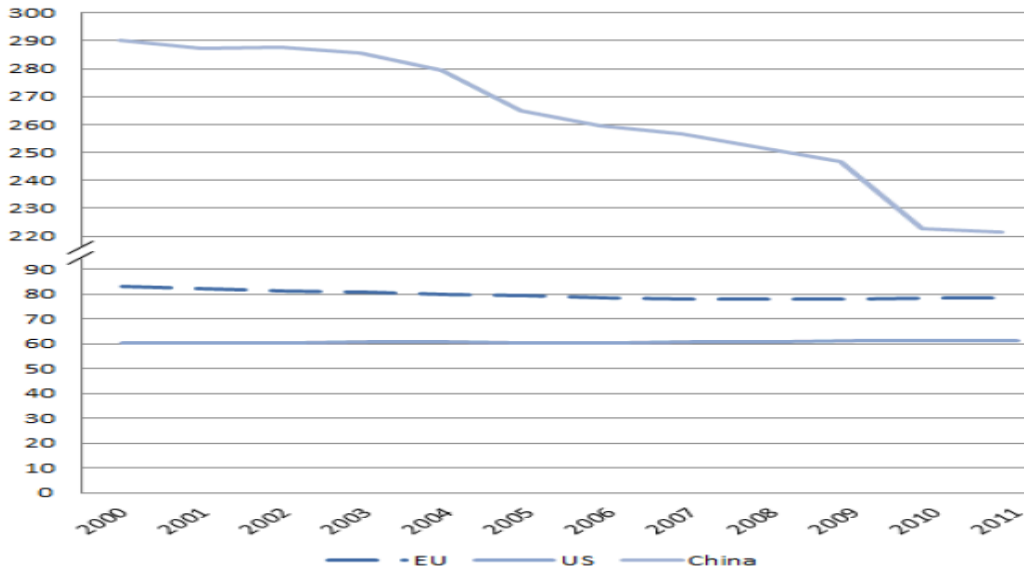
<sup>39</sup> Make2play's website. Available at: <http://www.make2play.com/matrice/blog/faq/products-original/> [Accessed 25th October, 2014].

<sup>40</sup> The Grommet, (2014). *Make2Play - DIY Learning Kit*. Available at: <https://www.thegrommet.com/make2play> [Accessed 25th October, 2014].

<sup>41</sup> Correio da Manhã, (2013). *A última jogada da Majora*. Available at: <http://www.cmjornal.xl.pt/domingo/detalhe/a-ultima-jogada-da-majora.html> [Accessed 4th November, 2014].

<sup>42</sup> Ibid.

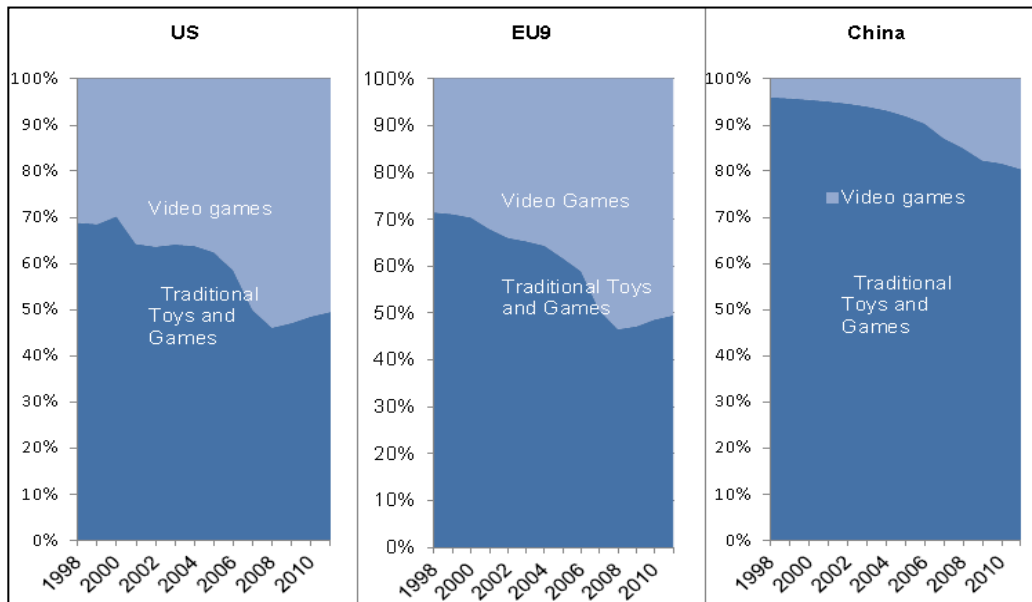
**Exhibit 17 - Number of children aged 0-14 years in the EU, US and China (in million)**



Sources: Eurostat, US Census Bureau, National Bureau of Statistics of China.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

**Exhibit 18 - Comparison of sales: traditional toys and games and video game**



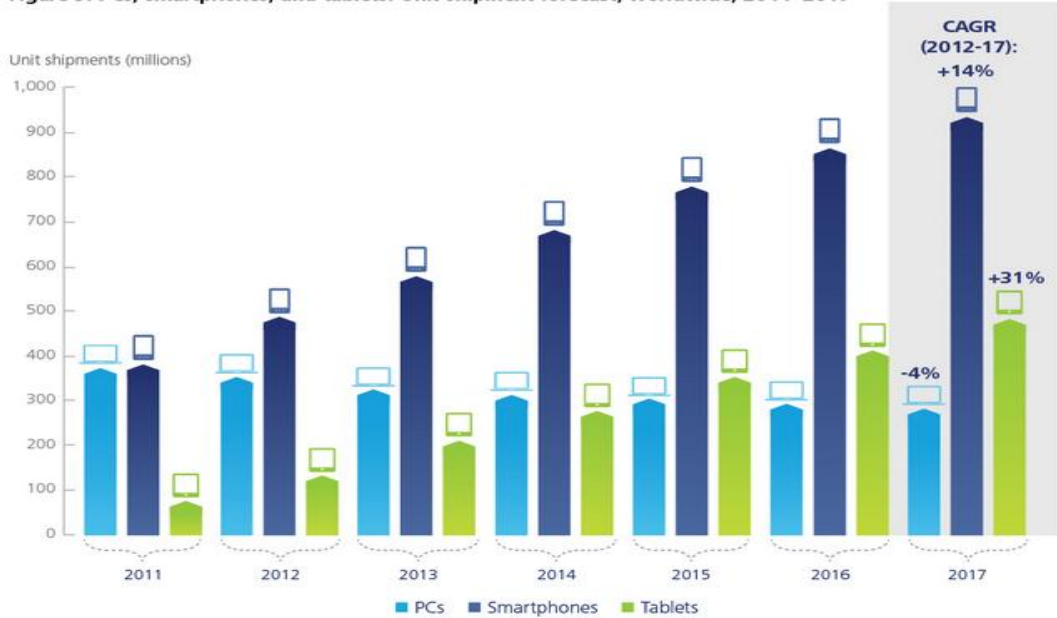
Source: Euromonitor.

Source: ECSIP consortium (2013). *Study on the competitiveness of the toy industry, Final Report.*

**THE MOBILE AND GAMES INDUSTRY**

**Exhibit 19 - PCs, smartphones, and tablets: Unit shipment forecast, worldwide, 2011-2017**

**Figure 9. PCs, smartphones, and tablets: Unit shipment forecast, worldwide, 2011–2017**



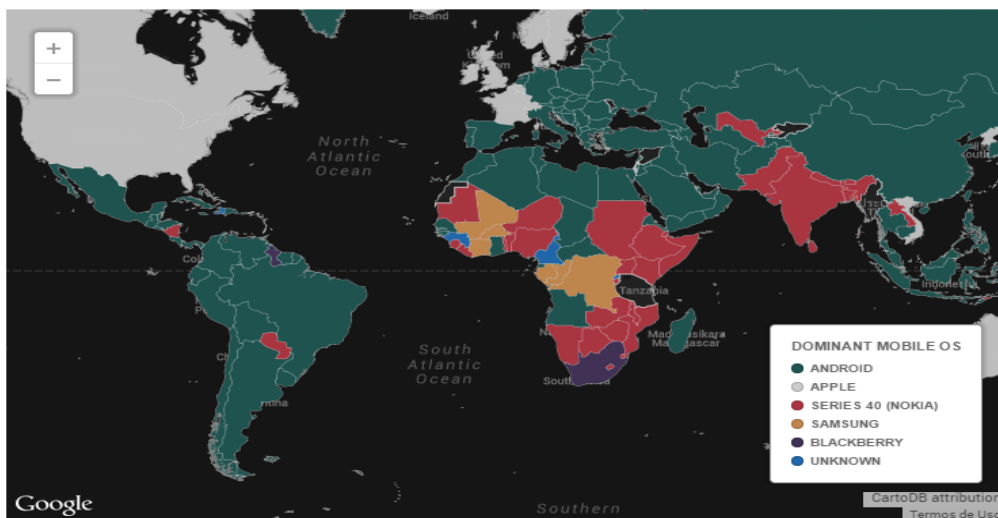
Source: Carolina Milanesi and Ranjit Atwal, *Forecast: Desk-based PCs, notebooks, ultramobiles and tablets, worldwide, 2010–2017, 1Q13 update*, Gartner, March 20, 2013; Annette Zimmermann et. al., *Forecast: Mobile phones, worldwide, 2011–2017, 1Q13 update*, Gartner, March 22, 2013; Deloitte analysis.

Note: "Smartphone" represents only the premium communication device category covered by Gartner, and excludes utility and basic communication device categories.

Graphic: Deloitte University Press | DUPress.com

Source: Wilson, Scott (2013). *Rising tide: Exploring pathways to growth in the mobile semiconductor industry*, Deloitte University Press.

**Exhibit 20 - Worldwide Mobile Operating System (OS)**



Source: <sup>1</sup> Mahapatra, L. (2013). *Android Vs. iOS: What's The Most Popular Mobile Operating System In Your Country?* International Business Times, 11 November. Available at: <http://www.ibtimes.com/android-vs-ios-whats-most-popular-mobile-operating-system-your-country-1464892> [Accessed November 8th, 2014].

## Exhibit 21 - Price comparison of tablets: S4Y vs. Direct Competitors (non exhaustive)

Company	Product	Price	Target	Place
Sunstech	Sunstech KIDO'Z Dual Core 7'	72 €	6+	Fnac
Lexibook	Tablet One	99 €	6+	Fnac
Ingo	Violetta - Tablet 7" Karaoke + Micro Violetta	99.99 €	6+	Toys r Us
<b>S4Y</b>	<b>Tab4You II 7'</b>	<b>99.99 €</b>	<b>6+</b>	<b>Fnac</b>
Lenco	KidzTab 12 Tablet 7' azul	119 €	6+	Fnac
Clementoni	Clempad Plus 7'	119.95 €	6+	Fnac

**Source:** Fnac and Toys R us website. Available at: <http://www.fnac.pt/> & <http://www.toysrus.pt/> [Accessed November 8th, 2014]

## Exhibit 22 - S4Y competitors profile for electronic toys (tablets and apps)

### *Sunstech*

Sunstech is a Spanish company that belongs to the group Afex Suns. The company comprises three business areas: tablets and smartphones, portable audio and visual products. From 2013 to 2014 the company has grown 60% in sales with a turnover around € 30 million. Its mission is "to be a prime supplier of new technology products for the Spanish and Portuguese distribution"<sup>43</sup>.

### *Lexibook*

Lexibook is a French based company, being its primary activity the sale of electronic products such as games, calculators, touch tablets, audio CD player, among others. Its products are sold through intermediaries such as department stores, wholesalers and retailers by email and e-commerce. The company has over 200 registered brands and renew one-third of its product portfolio, every year.

Lexibook has subsidiaries in Hong Kong, USA and Spain and sells its products for more than 40 countries<sup>44</sup>.

In fiscal year 2013-2014, total Lexibook sales were about € 43 M and 33% came from licensed products with Disney, Mattel and Marvel. The company also invested about 5.2% of that amount in R&D.

### *Lenco*

Lenco is headquartered in the Netherlands and produces and distributes a complete range of electronic products such as turntables, hi-fi, multi-room wireless speakers, tablets and sport cameras<sup>45</sup>.

<sup>43</sup> Electro Imagen, (2014). *Nuestra misión: ser un proveedor de referencia de productos de nuevas tecnologías para la distribución española y portuguesa*, 4 March.. Available at: <http://electro-imagen.com/articulo/nuestra-mision-ser-un-proveedor-de-referencia-de-productos-de-nuevas-tecnologias-para-la-distribucion-espanola-y-portuguesa> [Accessed 4th November, 2014].

<sup>44</sup> Lexibook's Website. Available at: <http://group.lexibook.com/> [Accessed 4th November, 2014].

<sup>45</sup> Lenco's website. Available at: <http://www.lenco.com/> [Accessed 4th November, 2014].



The company has its own sales organization in the Netherlands, Germany, Belgium and Hong Kong. Its product development and design team department are located in Hong Kong. Lenco also develops and manufactures its products for third party consumer electronic brands, in Hong Kong.

In the markets where it does not have an office, sales are done by local distributors. Lenco is present in 50 countries, including China, New Zealand, UK, Norway and Zimbabwe<sup>46</sup>.

### *Ingo*

Ingo is headquartered in Spain and it specializes in the production, distribution and marketing of electronics. It operates in 3 main areas: Consumer electronics, electronics toys and app products. Electronics include digital cameras, tablets, headphones and accessories. For tablets, the company has developed its own parental software.

Ingo also has licenses agreements with Disney, Mattel and Sanrio, enabling famous brands such as Monster High or Violetta to its product range of electronic and app toys.

The company has offices in London, Paris, Shenzhen and Hong Kong, and it exports for over 20 countries worldwide, mainly in Europe but also in Asia, Middle East and Latin America<sup>47</sup>.

### *LeapFrog*

LeapFrog is a US company that designs, develops, and markets technology-based learning products and related content for the education of children from infancy through grade school.

The company had \$ 553,6 million of net sales in 2013 and its R&D expense was around 6% of the same amount, while advertising expenses reached 9%. The majority of its products are manufactured in China; the company also has subsidiaries in Hong Kong and Shenzhen.

In 1999, LeapFrog opened its Schoolhouse division, which markets LeapFrog products directly to schools.

### *Samsung*

The Samsung T2105 Galaxy Tab 3 7.0 Kids is a tablet specially developed by Samsung to children. This tablet provides over 600 apps targeting children, although they are limited to specific countries. In Portugal, this tablet offers 6 apps in Portuguese language, including the S4Y application, which include 60 eBooks about the animal world and nature, among others<sup>48</sup>.

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<sup>46</sup> Ibid.

<sup>47</sup> Ingo's website. Available at: <http://www.ingodevices.com/en/about-us> [Accessed 5th November, 2014].

<sup>48</sup> Fnac's website. Available at: <http://www.fnac.pt/Samsung-T2105-Galaxy-Tab-3-7-0-Kids-Jogos-Educativos-e-Electronicos-Tablets-Educativos/a730827> [Accessed 8th November, 2014].

### III. LITERATURE REVIEW

#### 1. PEST analysis

There are external factors that affect the industry and, consequently, the company, in the short, medium and long term. Therefore, it is important to identify and comprehend these external factors that constitute the macro environment.

With PEST analysis, the variables from the macro environment can be grouped in specific contexts, promoting a greater objectivity for the assessment of external factors. PEST represents an acronym for each of the contexts: political/legal, economic, social and technological (*Johnson et al., 2002*).

The **political/legal** context addresses trends at the level of forces that allocate power, causing constraints and regulations.

The **economic** context identifies the trends at the level of the forces governing the exchange of goods, money, energy and information.

The **socio-cultural** context frames the forces governing the values, traditions and customs of society.

The **technological** context evaluates progress and the forces behind the innovations that enable the resolution of current technical issues.

The PEST analysis should be performed in order to identify the impact of trends in the industry being studied (*Cardeal, 2014*).

#### 2. Strategic Industry Groups

A strategic group is a set of companies from a specific industry which undertake similar strategies (*Cardeal, 2014*). Naturally, various strategic groups can coexist in any industry, reflecting their strategic positioning. Therefore, competition takes place at two complementary levels: within the same strategic group and among different strategic groups (*Freire, 1997*).

Strategic groups provide key insights into marginal or unviable strategies, unexplored positioning by competitors, key success factors for each strategic group and strategic moves by competitors.

Companies can change their strategies over time and move into different strategic groups or form new ones, making strategic groups as dynamic as the underlying corporate strategy.

### **3. Industry Life Cycle**

The concept of Industry Life Cycle is similar to the concept of Product Life Cycle highlighted by Levitt (1965), which states that "the life story of most successful products is a history of their passing through certain recognizable stages". The four stages recognized by Levitt accordingly with the sales evolution are: market development, market growth, market maturity and market decline.

Like products, so do industries have a life cycle divided in four stages accordingly with the sales evolution: introduction, growth, maturity and decline (Porter, 1980).

In the introduction phase, the industry is still quite unknown and the turnover grows slowly. In the next stage of growth, an increasing number of customers begin to adhere to the products and the industry sales volume begins to grow rapidly. At the same time, the entry of competitors makes the industry more concentrated or fragmented, according to the market share held by the companies.

When the sales growth rate begins to slow down, the industry enters on its phase of maturity. The rivalry between competitors intensifies and growth is achieved through the acquisition of market shares from competitors.

In the last stage of the cycle, the maturity phase, sales volume begin to decrease and an excess of installed capacity is verified, while some competitors begin to abandon the industry.

Each phase of the Industry Life Cycle has generic implications upon the strategies of companies, as a result of the different opportunities and seeming threats which companies are subject to (Lynch, 2003).

### **4. Porter's 5 Forces**

Michael Porter states that usually managers define competition too narrowly, with respect only to today's direct competitors (Porter, 2008). In fact, "competition for profits goes beyond established industry rivals to include four other competitive forces as well: customers, suppliers, potential entrants, and substitute products."

By understanding the competitive forces, it is possible to determine the intensity of competition, and hence profitability and attractiveness of an industry.

The potential for new entrants in an industry depends on the level of entry barriers and the reaction that can be expected from incumbents. If the level of barriers and the retaliation from incumbents is low, the threat of entry is high and industry profitability is moderated.

The bargaining power of suppliers is determined by the ability to capture more value for them by charging higher prices, limiting quality or services, increase delivery time or require more favorable payment terms. A supplier group is powerful if it is more concentrated than the industry it sells to. Similarly, the bargaining power of customers determines how heavy may be the pressure placed by customers in margins and volumes of industry sales. Customers are powerful if they have negotiating leverage with respect to industry participants. A customer group can have negotiating leverage if there are few buyers, the industry's products are standardized or undifferentiated or the buyers face few switching costs, for example.

Pressure from substitute products corresponds to products or services of different industries that perform the same or similar functions and meet the same needs of consumers. When the pressure from substitute products is high, industry profitability and growth potential is limited (Porter, 1970). The pressure from substitute products is high when it offers an attractive price-performance relation and the switching cost of buyer's towards the substitute is low, for example.

Rivalry among existing competitors can take many forms such as price discounting, new product features, advertising campaigns, and service improvements. Higher rivalries result in greater pressure on prices and on the margins, resulting in loss of profitability for operators. The intensity of rivalry is higher if there are a large number of competitors or if they are similar in size and power, the industry growth is slow and exit barriers are high, for example.

## **5. Industry Key Success Factors**

Industry Key Success Factors (KSF) corresponds to variables that, depending on the business management, allow some companies to compete with distinction by creating higher value to customers (Eisenhardt & Martin, 2000). These factors enable the company to survive and thrive in a specific the industry. To do so, the company must meet two conditions; provide what customers want to buy and survive to competition (OHMAE, 1982). After the recognition of consumer preferences, managers can identify the factors that enable the company's success. The second condition implies an analysis of the nature of competition in the industry. To analyze the KSF, a table with three columns can be created, corresponding to the Key Purchase Factors, Purchase Key Success Factors, and the Industry Key Success Factors. The conclusions drawn from the strategic analysis depend on the definition adopted of the industry.

## **6. New SWOT analysis**

The SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), relates the strengths and weaknesses of the company (as the result of an internal diagnostic), with the opportunities and threats of the environment (Johnson, Scholes, and Whittington, 2008).

It should allow for the identification of ways to take advantage of opportunities and mitigate the potential effect of threats, by taking advantage of strengths and minimizing the company's weaknesses.

The new SWOT replaces threats with time (Freire, 1997), due to the growing importance of this factor for strategic decisions of a company, and the fact that a threat could actually be seen as an opportunity.

The company should be able to exploit any opportunity, unless it reacts too late, it does not have the capacity or resources needed or there is a lack of strategic thinking in the organization (Cardeal, 2014).

## **7. Generic Competitive Strategies**

Competitive advantage represents the ability of the company to generate more economic value to customers than marginal competitors in the industry, being economic value the difference between the perceived value of products to the customer and the cost to produce and distribute it. Therefore, companies can choose either to increase economic value of its product through perceived value to customers or by reducing production costs.

According to Porter's generic strategies (Porter, 1980), companies must choose between three alternative strategies such as cost leadership, differentiation or niche. This author also defends that "achieving cost leadership and differentiation are usually inconsistent, because differentiation is usually costly". However, later on, Phillips, Chang and Buzzel (1983) concluded that cost leadership and differentiation strategies may not be incompatible. In fact, the vast majority of companies nowadays not only seek to differentiate itself from competitors in some way, but also with great cost concerns.

## **8. Model for the evaluation and selection of strategic options**

For the evaluation of different strategic options included in the business, internationalization and corporate strategy, managers must perform four tests: Consistency, adequacy, acceptability and visibility of the strategic option (Cardeal, 2014).

The first test of consistency, aims to identify whether the strategic option is in line with the company's organizational purposes, meaning its mission, vision and goals. If there is no alignment of company's organizational purposes with the strategic option, the company can choose to change the mission, vision, and objectives or, at the limit, to reject the strategic option.

The second test of adequacy, intends to evaluate the alignment of the strategy with the conclusions from the strategic analysis. This test verify to what extent the strategic analysis is in

accordance with the suggestions of the new SWOT analysis. To pass the test, the strategic option must be supported with company's strengths, in particular its VRIO<sup>49</sup> abilities or resources, leveraging the opportunities mentioned and increasing the strategic fit in relation to industry trend.

The third test of acceptability, aims to evaluate the risk and the estimated return of strategic option, assessing the acceptability of main stakeholders. Some commonly used indicators are the Internal Rate of Return (IRR), the Net Current Value (VAL), the Return on Investment (ROI), the PAYBACK PERIOD and the Critical Point of Sales (PCV).

The fourth and final test of viability, intends to analyze the company's ability to implement its strategy. To test whether the option can be implemented, managers must look for the critical aspects of putting the strategic option into practice, and if they are in line with the internal reality of the organization assessing, for example, the financial and human resources, as well as systems and internal processes.

Whenever the critical aspects don't fit, it is important to know if the company has the possibility to adapt, mobilizing the resources and capacities in order to run the option.

The selection of right options should incorporate the results obtained by the different tests, in order to understand the future implications of each option.

Along with the implementation of the strategic option, it is important to monitor internal and external contexts, verifying the extent to which the assumptions that led to the definition and subsequent selection of the strategy remain valid.

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<sup>49</sup> Valuable, Rare, Inimitable resources and Organization

## **IV. TEACHING NOTES**

### **1. Case summary**

This case study focuses on Science4you, S.A. (S4Y), a "100% Portuguese company", dedicated to the development, production and marketing of toys as the core business and to secondary activities such as birthday parties, holiday camps, training courses and scientific animations.

The company, created in 2008 by Miguel Pina Martins, resulted from a partnership held with Faculdade de Ciências de Lisboa that lasts until today. In just 6 six years, S4Y has had a remarkable growth, moving from a sales volume of € 50k in 2008, to an expected sales volume of € 5,500k in 2014.

Since the beginning, S4Y adopted a differentiation business strategy, partnering with multiple entities related with science such as universities and museums which increase the perceive value to customers. The company also manages to keep the prices of their products below or in line with the ones from competitors, by resorting to Portuguese suppliers.

Limitations of Portuguese market along with business seasonality, contributed for an adoption of an internationalization strategy, since an early stage. A year after its establishment, in October 2009, S4Y began to export its products to the Spanish market through a partnership made with FNAC, the following year it expanded to Brazil and Angola. Currently, S4Y exports its products to 14 markets around the world, having opened in 2011 its first subsidiary in Spain and in 2013 in the United Kingdom. One medium-term strategic objective of S4Y is to enter in the German market.

In December 2013, S4Y created a new technology product line, releasing to the market its first tablet device for children, called "Tab4you".

### **2. Synopsis**

In this case study, it is important to evaluate the strategic option of S4Y towards technology products, to explore new opportunities for improvement throughout the value chain and the best possible way to fit the product with customer needs, in order to enhance the growth of the company.

The questions that arise from this case study are: Does it make sense for a company like S4Y, whose main activity is related with the production and marketing of traditional educational toys to enter into a technological area, different from yours? To what extent are these products aligning with corporate resources, capacities and partnerships held by S4Y? What different partnerships and products could be created in order to gain a greater market share?

### 3. Teaching Objectives

The case study aims to illustrate the steps taken by S4Y, in terms of its business, corporate and internationalization strategy that contributed to a fast growth.

The educational goal proposed is to give management students the opportunity to apply the knowledge they have acquire in the classroom, in a real business case.

Students must be able to identify, analyze and understand the key competencies and resources needed to create a sustainable advantage, as well as the brand positioning on a specific market.

The professor must submit the case study at the end of the class and ask students to prepare it for a discussion in the following class.

Students must focus on the business strategy adopted by the company, on the environmental analysis and internal context, and to evaluate the strategic option of creating a new line of products.

To analyze the case, students can use a set of tools/frameworks learned in class, namely, a PEST analysis, a strategic industry group's analysis, the industry life cycle, the Porter 5 forces model and Porter generic competitive strategies and the Key Industry Success Factors. It should also be requested a new SWOt analysis. At the end, students must evaluate the strategic option of creating the new technological product line.

### 4. Suggested Assignment Questions

#### *1. Analyze the contextual environment of traditional toy industry.*

Considering the information contained in the case study, when analyzing the contextual environment or macro environment, one should bear in mind the global and European context:

**Politically and legally**, the two biggest factors that influence the industry relate to the legislation associated with toy safety including security mechanics, physics and chemistry, and the counterfeiting of toys.

On the one hand, the legislation provides a set of conditions for companies, in particular, administrative costs and tests, which may adversely affect the results of the companies as well as the time associated with the launch of new products, especially for small and medium-sized enterprises that are required to perform substantial investments in equipment and facilities suitable for quality testing to its products or, on the other hand, sub-contracting other companies to do so.



Counterfeit is another major problem that the industry has been dealing with since decades, until today there have been some improvements with the development of stronger patents. However, products are still copied, being sold with a similar trademark, and often the affected companies are powerless about it. The biggest problems come from China and Turkey.

**Economically**, the crisis of Western markets, as well as the austerity measures adopted by some European countries, has contributed negatively to the traditional toy industry, since the disposable income of households has decreased, with the consequent breakdown of demand for products, in particular those that are not primary. However, the economic growth registered in emerging countries in the East such as China, contributing to the increase in demand for toys, affecting positively the industry. Despite this, the wage increase and currency appreciation have raised their production, with negative effects for the industry, driving up prices.

Another important economic factor relates to birth rates. As can be seen through the exhibit 17, the number of children aged 0-14, has remained stable in Europe, and decreased in the United States and China. The "one-child" policy adopted by the Chinese Government was the main factor of this birth breaks, remaining still, above the other geographies. This indicator negatively influences the demand for toys.

In the **social** field, the increasing adoption of technology products for the children on the one hand and the reduction of the period of childhood on another, has a negative impact on traditional toy industry, since the demand for this type of product is lower. In exhibit 18, we can compare the evolution of traditional toys and video games industry in the most important markets, despite the recent sales growth, it can be observed a growing trend for video games that reach, in the US and EU9, about 50%. However, in China, despite the increase in video games demand, traditional toys still represent around 80% of the total sales volume.

In **technological** terms, the development of new technologies such as Near Field Communication (NFC) and mobile applications and devices, have a positive impact on the traditional toy industry, as companies like S4Y can create new products focused on these technologies.

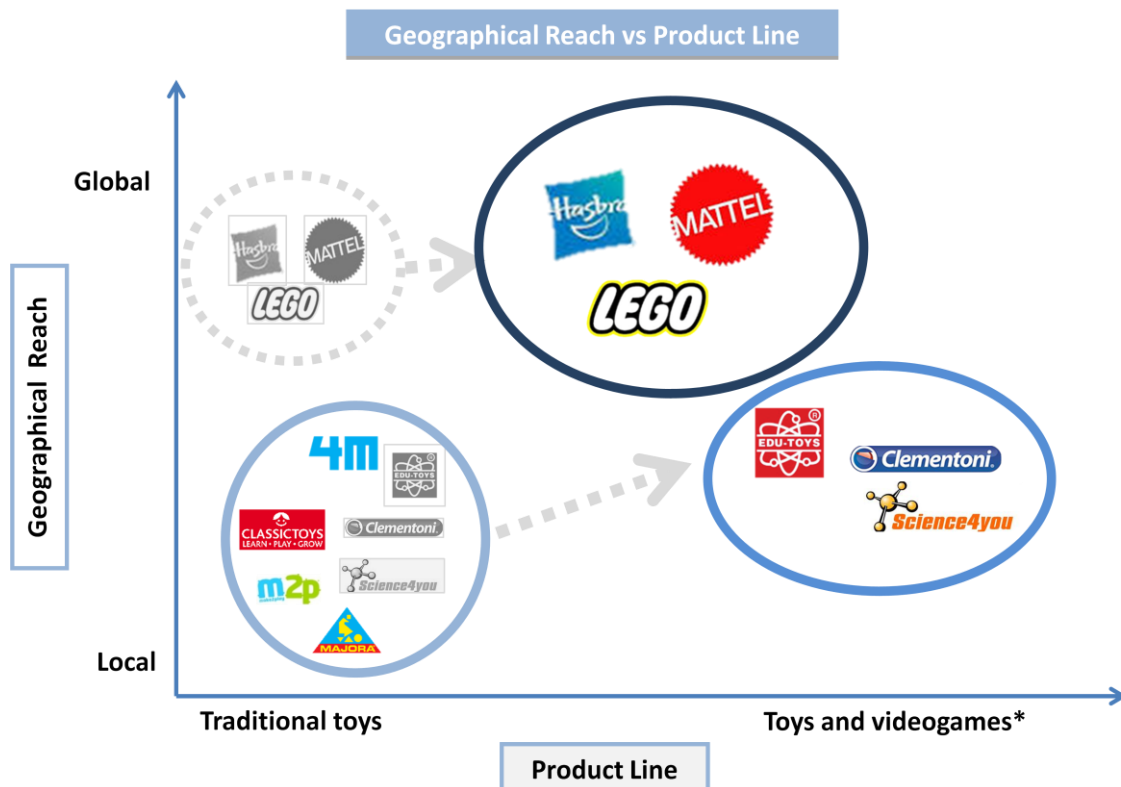
The Internet, through e-commerce, made it possible to lower prices of products to end consumers and increase profit margins of toy companies. In several European markets, the weight of online sales exceeds 10% of overall sales channels. The countries of southern Europe have a lower weight in this type of sale channel, but its growth has been accelerated.

Context	Trend	Impact	
		Positive	Negative
Political/Legal	Safety Legislation		Higher costs with administrative tasks and tests.
	Counterfeit		Loss of revenue to the parallel market and can damage brand image.
	China birth policy		Decrease the market potential for toys.
Economical	Crisis of western markets Austerity measures in Europe		Loss of disposable income to purchase toys.
	Economic growth of emerging markets	Increase the demand for toys.	
	Low birth rates in Western markets		Decrease the market potential for toys in the US and Europe.
Social	Technology adoption by children Reduction of the period of childhood		Decrease the demand for toys. Children tend to substitute them for technological products.
Technological	Development of new technologies	New products can be created using NFC, for example. It increases demand for toys.	
	E-tailing	Contributes to lower the price of toys to final consumers.	

## ***2. Analyze S4Y competitors identifying strategic industry groups and the corresponding strategic moves.***

To analyze the strategic movements of each group, it is necessary, firstly, to identify the competitors whose strategies are similar and that coexist in the same industry.

In this way and resorting to the information provided in the case study about competitors, 3 strategic groups can be defined according to the product line offered and their geographical coverage:



\*Including traditional toys and electronic toys with mobile games and devices.

This graph represents a strategic move made by companies almost exclusively, associated with traditional toys, towards a diversification of their product portfolio, in particular to technological products such as mobile apps or NFC toys. In fact, the biggest companies of the industry followed this trend towards tech toys, however some smaller companies did not take the same strategy. In the case of the famous Portuguese toy company Majora, one of the factors that led it stop production, was precisely the lost of interest from its toys, mainly because it could not adapt them to new technologies in time.

**3. Identify the stage of the Industry Life Cycle of the traditional toy industry and the corresponding strategic orientations.**

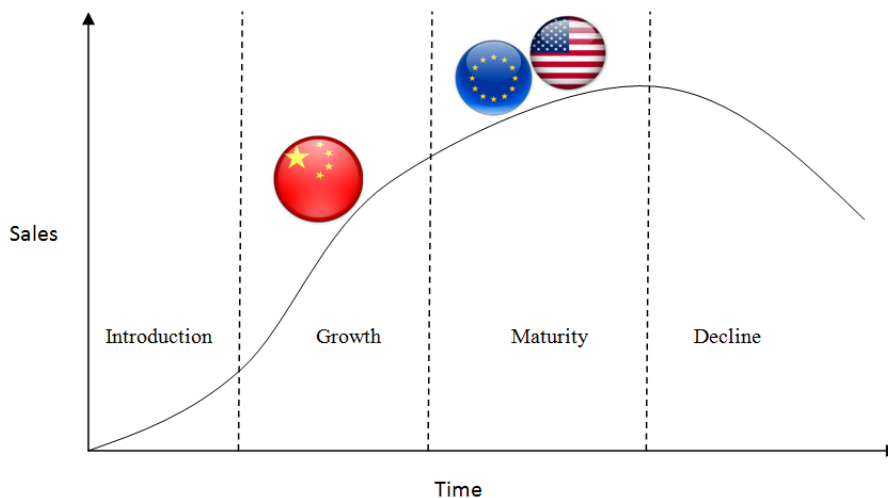
As can be seen from the chart corresponding to exhibit 4, the evolution of the traditional toy industry sales have come to stabilize in western markets, namely in the United States and Europe. On the contrary, in emerging markets, the sales have been increasing, namely in China.

Considering those results, we can observe that the European and North American traditional toy industry is at a mature stage, and emerging markets are in a growth phase.

In Western traditional markets, the company's strategy can pass through increasing internationalization with the entry in Asian markets and the diversification of its products as for

example the creation of "smartwatches" for children or other devices adaptable to children, other companies are entering in different industries by creating movies, as Lego for example. The acquisition of other companies linked to toys or video games represent another strategic path, with the benefit of economies of scale and experience.

Growing markets, like Asians, present great opportunities for businesses of traditional toys, companies like S4Y should undertake partnerships held with producers and the local retailers, to respond for local demand but also to gain economies of scale and so, higher margins in a market with great potential.



#### ***4. Analyze the attractiveness of traditional toy industry***

The assessment of the industry attractiveness should be conducted by using the Porter Five Forces model.

##### **Potential of new entries**

On the production side, costs with patents and quality tests hamper the access of new companies to the industry.

On the retail side, the e-commerce contributes to lower input costs, facilitating the sale of products while increasing their sales margins simultaneously.

On one hand, there are low switching costs for customers in this industry, increasing the threat of new entries. On the other hand, there is also much loyalty to the brands already established. Companies like Hasbro, Mattel or Lego hold product licenses that increase the number of loyal customers while contributing for the production of large quantities with economies of scale, decreasing the threat of new entries.

The risk can be assessed as **moderate**.

### **Pressure from substitutes**

Technology toys such as mobile devices and video games are contributing for a greater pressure in this industry.

Despite the initial high price of some of these products, the price-performance ratio turns out to be superior.

The pressure from substitutes can be assessed as **high**.

### **Bargaining power of suppliers**

As showed in exhibit 8, in Europe, there are a large number of manufactures for toys and games (5,330 in 2010). About 84% of those manufactures are micro companies. In EU9, the three largest toy companies represent about 25% of market share, which indicates some concentration, however there are many other companies in this industry which decreases the dependence of suppliers.

The risk of vertical integration is low because the toy companies typically rely on multiple vendors and suppliers also produce for other industries.

The bargaining power of suppliers can be assessed as **Low**.

### **Bargaining power of buyers**

As can be seen through the exhibit 12, leading industry customers are, firstly specialist retailers in toys such as Toys R us or Sr. Brinquedo in Portugal and, secondly, the grocery stores or supermarkets such as El Corte Inglés, or the Continent in Portugal. Through the corresponding graph to exhibit 13, we can see that in the EU, less than 1% of the overall number of retailers holds about half of the total turnover, implying a strong concentration and importance of some retailers, such as those mentioned.

The vertical upstream integration risk is moderate. Some companies like Toys R Us have their own brands such as "Universe of Imagination", "Fast Lane", among others including the tablet for children (Tabeo). However, the e-commerce and the opening of their own store, as S4Y is doing with forward integration, contributes to lower that risk once companies become less dependent upon retailers, achieving this way a greater flexibility to define its product margins.

The bargaining power of buyers can be assessed as **moderate**.

### **Competitive rivalry**

Taking into consideration the impact of the forces mentioned above, there is a heightened rivalry among the participants of the traditional toy industry. Nevertheless, we can verify the existence of several competitors with similar dimensions and strategies, in terms of geographical size, volume of sales or product portfolio. The European market, in particular, highlights a weak growth, contributing for the sales growth of companies to be highly correlated with market share they gain from others.

The competitive rivalry can be assessed as **high**.

Overall the **industry attractiveness** is **moderate**.

##### ***5. Identify S4Y positioning as well as its competitive advantage.***

The S4Y manages to get competitive advantages, i.e. generate more economic value to their customers than the marginal competitor to industry through the following ways:

Focusing its activity in the niche market of educational toys for children, with a small number of competitors especially in Portugal.

Partnering with universities and museums, allowing increasing the value perceived by customers with regard to its products. Those partnerships contribute for a greater credibility in the market, due to the use of certificates obtained from prestigious science institutions such as universities, and also to add value for the customer through free tickets for both children and families that allow the entrance in museums.

Another advantage that results from the partnership held with FCUL is the cost reduction from facilities and materials/equipment needed to perform the quality tests.

On the other hand, the company culture as well as its R&D team composed by young people, mainly experts in the fields of science, contributing for the design and development of new educational toys effectively and efficiently, in a market with a short PLC<sup>50</sup>.

These last two factors, among others, contribute for the educational toys to be sold at a similar price or even lower than the ones from competition.

Finally, their complementary activities such as the Organization of birthday parties, workshops and trainings contribute for the acquisition of a greater insight into customer needs.

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<sup>50</sup> Product Life Cycle

**6. Analyze the Industry Key Success Factors, the strengths and weaknesses of the company and do a new SWOT analysis. What strategies can you recommend to the CEO Miguel Martins?**

To understand the Industry Key Success Factors it is necessary to recognize the reasons that led customers to buy certain toys in detriment of others, that is, the Purchase Key Success Factors and consequently, understand how the companies compete to create customer value in these Purchase Key Success Factors.

The table below provides an analysis of the Industry Key Success Factors applied to the toy industry.

<i>Purchase Key Factors</i>	<i>Toys and Games</i>	<i>Industry Key Success Factors</i>
Product quality and safety	Fast development of new products	Research & Development
Product design	Innovation and differentiation	Brand image
Price	Brand awareness and reputation	Production costs
Educational component	Quality and safety	Quality management
Entertainment component	Customer loyalty	Operational flexibility
Longevity of toy/playability		

After conducting the external analysis, with the identification of what needs to be done right, it is important to do an internal analysis of the company. The internal analysis allows us to identify the strengths and weaknesses of the company, that is, the set of resources/ capabilities held by company which enables it to create value for their customers and gain a competitive advantage vis-à-vis its competitors, as shown in the next table.

<i>Strengths</i>	<i>Weaknesses</i>
Range of products	Brand promotion
Partnerships	Centralized production and assembly
Price	Lack of legal protection for its products
Non-core activities	Low quality management control
Portuguese Suppliers	
S4Y own stores	
Young team from different backgrounds	

After conducting the external and internal analysis, with the identification of **Industry Key Success Factors** and the **weaknesses** and **strengths** of the company, respectively, which contribute for value creation to customers, one can analyze the strategic fit of S4Y, through the following table.

<i>Strengths &amp; Weaknesses</i>	<i>Industry Key Success Factors</i>				
	<i>R&amp;D</i>	<i>Brand image</i>	<i>Production costs</i>	<i>Quality management</i>	<i>Operational flexibility</i>
<b>Strengths</b>					
Range of Products	5	4	5		
Partnerships	3	4	3	2	
Price	4		5		
Non-core activities	4	3		3	
Portuguese suppliers		2	2		4
Own stores and stands		3			3
Young team from different backgrounds	4				3
<b>Weaknesses</b>					
Brand promotion		-5			
Centralized production and assembly	-4		-4		-3
Lack of legal protection for its products	-2	-3			
Low Quality Management Control		-2		-2	
<b>Average rating by KSF</b>	<b>2.8</b>	<b>1.2</b>	<b>2.2</b>	<b>0.6</b>	<b>1.4</b>

The table shows the average score of the company performance by each Industry Key Success Factor. In the case of S4Y, the two factors with the greatest performance are the R&D and production costs, while the ones with the poorest performance can be assessed as its brand image and quality management.



New SWOT analysis (table version):

New SWOT analysis		
Strenghts & Weaknesses	<u>Short and medium term opportunities</u>	<u>Medium and long term opportunities</u>
<b>Strenghts</b>		
Range of Products Partnerships Price Non-core activities Portuguese suppliers S4Y own stores Young team from different backgrounds	<ul style="list-style-type: none"> <li>• Product extension targeting different age segments as babies</li> <li>• Create new educational apps and an integrated software</li> <li>• Partnership with specialized software companies</li> <li>• Partnership with associations involved in education</li> <li>• Provide training for parents and teachers on tech toys</li> <li>• Increased the range of technological products</li> </ul>	<ul style="list-style-type: none"> <li>• Export scientific kits and tech products to Asian markets</li> <li>• Partnership with Ministry of Education for the certification of products' educational content, in particular for Apps</li> <li>• Supply mobile devices to schools and training centers for children</li> </ul>
<b>Weaknesses</b>		
Brand promotion Centralized production and assembly Lack of legal protection for its products Low quality management control	<ul style="list-style-type: none"> <li>• Brand promotion through TV stations and licensing agreements</li> <li>• Diversification of suppliers and warehouse</li> <li>• Implement a different quality management system</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of a Department for the coordination of international operations</li> <li>• Start producing in Asian markets</li> </ul>

According to the strategic analysis conducted, traditional toys are losing market share for new technological toys and video games to children, particularly in Europe and in the United States. In these markets, for the last 10 years, videogames have increased their market share by 30% over traditional toys, accounting nowadays around 50% of overall traditional toys and videogames sales volume.

The adoption of mobile devices is increasing among children, and at early ages. In 2014, in United Kingdom, 11% of children with 3 to 4 years have their own tablet, up from 8% in 2013. In the EU9, about 49% of children between 9 and 16 years old own a smartphone, while 20% own a tablet. The use of educational apps is also significant, 44% of children, between 5 and 8 years old from North America, play educational games on a mobile device. **It is recommended for the company an extension of its products, specially tablets and smartphones, targeting children with 3 to 6 years old and from 9 to 12 years old. The company can also invest in a new product line with toys for babies (science4baby e.g.).**

Through competitors analysis, S4Y strengths and weaknesses, the Industry Key Success Factors and new SWOT analysis, can be found relevant internal aspects that the company can improve. For example, its quality management and brand promotion, both for traditional toys and its tech line.

In fact, in comparison with competitors, its marketing expenses are lower. The company could invest in the **promotion of its brand, through traditional media channels, such as television commercials**, while making **licensing agreements** with worldwide popular brands, as Nickelodeon or Disney.

The limited monitoring level of production represents a high risk for S4Y. Despite the number of defective toys to be insignificant, the company may incur substantial expenses while producing in a larger scale, exporting its products to international markets. Therefore, **it is recommended a regular monitoring system for the production and quality of its products.**

The fact that 60 to 70% of the components are produced by Portuguese suppliers, allows S4Y to increase its operational flexibility, through a more direct contact, reducing transportation costs and enhancing the brand image in Portuguese market, with the logo "Made in Portugal". However, the company could increase this flexibility in its international markets, by **contracting suppliers in those geographies and sub-contracting a company or with the acquisition of a warehouse for the assembly of toy components**, further reducing its transportation costs, making distribution more efficient.

The two major internal forces of S4Y are related both with the price of its products and partnerships. In fact, the prices of traditional toys are lower than competitors, as a consequence of the company demand for more efficient Portuguese suppliers.

However, some electronic components need to be imported, making the price of technology products such as tablets to be relatively higher, being in line with those of competitors.

The partnerships held with universities and museums allow it to increase its brand image and the perceived value to customers. In addition, the partnership with FCUL, contributes to decrease operational costs and to access for qualified and young people, in an environment conducive to innovation.

With respect to tablets for children, since the company does not have a sustained competitive advantage in relation to price, **it is recommended for the company to adopt a differentiation strategy for tablets.** The company should seek to develop **more educational applications**, accessible through its mobile devices, and adapted to different international market segments to where it exports, in terms of language and age. The company can still create an **integrated**

**software platform for parents, teachers and children**, with educational games for the development of different knowledge areas such as communication, logic or creativity.

**It is recommended to partnership with other companies specialized in software development for children as the Portuguese company MyChild, S.A.**

In the **medium-long term**, the company can establish **partnerships with schools or training centers for the supply of mobile devices to students.**

**It is recommended the establishment of partnerships with associations involved in education**, as parents associations, "Associação Portuguesa de Matemática", teachers and other educators associations, in order to improve its brand image and recognition of its apps and mobile devices.

**The secondary activities of S4Y can be a great tool, helping to improve the image and awareness for new technologies.** Workshops can be done at schools, providing training for parents on how to use and protect children from mobile devices, motivating teachers for their use and for the benefits of new technologies such as improving the learning experience among children.

Another important decision that the company must take in the medium-long term, its related with its entry in China and other emerging Asian markets, which so far have not been included in its internationalization strategy. However, the market size and the development that has occurred in these economies, with the increase in purchasing power of people, gives signs of great potential. On the other hand, a lot of companies reallocate their production (total or partial) to China, achieving a cut in production costs. **In the medium-long term, with an increase in demand from international markets, it is recommended the production in China, as a way to benefit from economies of scale, and to export its products across Asian markets.**

To conclude, **it is recommended that the company focus the production of traditional toys as scientific kits**, in the categories which present a higher demand in Europe, such as **games and puzzles**. On the other hand, the **technological toys are a growing reality in the daily lives of children, and therefore, it should not be ignored**. The company could also seek to **adapt other technologies used by adults to children, such as "smart watches"**. Furthermore, the company should also seek to minimize its internal weaknesses and leverage its strengths.

***7. Evaluate the strategic option of the new technology line, Should the company follow this path or focus in traditional toys for children?***

The strategic option of creating a new line of technological products must be carried out by taking into account 4 tests:

- Its **consistency** with the company's organizational purposes;
- The **strategic fit** with the conclusions of the strategic analysis carried before;
- Its **acceptability** in relation to expected returns and risks
- The **viability** of its implementation.

**Consistency**

On a more superficial analysis the entry of S4Y in technological toys, may create some conflicts with the mission statement. In fact, it might seem that products such as tablets, smartphones or NFC toys rise less attention to science, unlike other products as scientific kits. However, educational apps like virtual puzzles, quizzes and e-books, developed by S4Y with the aim of improving children knowledge in fields such as mathematics, language, chemistry, biology and astronomy, along with the possibility to download other educational apps, is in line with its vision to improve education standards through toys and games, enabling children to learn while playing, in this case with their mobile devices.

**Strategic fit**

The new SWOT analysis which integrates an analysis of the environment and the internal context of the company, introduces a set of suggestions that can be leveraged upon the adoption of the strategic choice towards technology toys.

From the environmental point of view, studies reveal a stabilization of the traditional toys growth rate, while the growth rate of technology toys, in particular videogames, is increasing in major Western markets. Children are also adopting new technologies at early ages (since 3 years old) and they are maturing at a faster phase, phenomenon called KGOY (Kids Getting Older Younger), implying therefore a shorter playing period and the redefinition of toys to children.

Furthermore, the strategic groups' analysis shows the strategic movement made by the industry biggest companies and small SMEs towards technological toys, especially to apps and NFC toys. Through the strategic group map, it can be seen a significant risk to companies that remain local and limiting its product portfolio to traditional toys.

From an internal perspective of S4Y, its strengths, namely partnerships held with institutions related to education and science, as is the case of universities, training centers for children and science institutions, its secondary activities and team composed by young, creative and dynamic people, qualified from various scientific, social and art fields, give S4Y a competitive advantage for the development of truly innovative toys and differentiating software apps. These products

also have the possibility to be recognizable and accredited by prestigious institutions, in the areas of science and education. Moreover, complementary activities can be a valuable asset in the promotion of mobile devices by giving training for parents and educators about best practices, answering to their concerns and fostering an integrated use, while raising awareness for the benefits associated with children's learning from mobile devices and apps.

### **Acceptability**

This test is designed to evaluate the risk and estimated return of the strategic option, as the reaction from major stakeholders. In fact, at the end of 2013, the company decided to create a new product line "Tech4you", launching its first tablet for children, investing € 500k. In just one year and only in three markets (Portugal, Spain and the UK), the weight of this technological product line became representative of 20% of total revenue volume, corresponding in 2013 to an approximate value of € 557.8k. It is plausible that the company can achieve an expected return of € 1M to € 2M, in the medium-long term, or even less if it exports to more markets.

The CEO claims that the creation of the tech4you product line is a natural extension of the company growth. In the future, it intends to maintain the core business which is educational and scientific kits, but the technological reality is increasingly present in the daily life of children, so it is essential that the company continues to include technological innovations suitable for children. The expectation is that the weight of technological product line will have a growing importance in turnover.

### **Viability**

For the implementation of its strategy in relation to technological product line, it was necessary to carry out an investment of € 500k, in the production of technological products and the development of mobile applications. The company hired a team of five programmers, specialized in software development.

To conclude, through the evaluation made, **it is recommended that the company continues to produce traditional toys as scientific kits, as well as technological toys.**

## V. CONCLUSION

This dissertation allowed me the opportunity to get involved in a real business situation and to acquire a better understanding of the toy industry.

It was very interesting to study the path followed by S4Y, from the conception of the idea and project development to the actual creation of the company. I was able to understand the importance of the strategic decisions made by S4Y in the past six years that contributed for its remarkable growth, in particular, with the identification of a business opportunity in the niche market of scientific kits for children, the creation of synergies through strategic partnerships made with science-related institutions, the entry into new markets since an early stage and the release of innovative and creative products at a constant basis.

With the support of the tools introduced in the Literature Review, the main question regarding the strategic option of producing technological toys by S4Y has been answered, in fact, the strategic analysis tell us that this represents a correct path. On the other hand, results showed in just a year, indicate the success of the strategic option taken. However, if the company wants to have a sustainable competitive advantage in these products, particularly in tablets and smartphones, it should invest in differentiation, through the development of innovative software apps and making strategic partnerships.

At the corporate level, the strategic decision towards the vertical integration downstream, with the opening of its own stores and stands in shopping malls while investing in e-tailing, positively contributes to decrease its dependence on retailers, increasing the visibility of its products.

The internationalization strategy has had very positive results for S4Y, despite its production and organizational structure are still very centralized, and may limit its long-term strategy with the entry into new markets.

In a future research, it would be interesting to explore the possibility of creating new product lines and the internationalization of S4Y into other markets.

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