Mobile Computing Toys: Marketing Challenges and Implications

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Abstract Global sales of traditional toys such as dolls, action figures, and role-play games are either flat or shrinking. One of the main reasons for the slow or negative growth of sales is the increase in internet and console-based video gaming across multiple devices and platforms. Faced with this disruptive force, traditional toy makers are increasingly trying to develop toys that incorporate interactivity through software integration and mobile interconnectivity. Though the idea of creating this synergy between traditional toy hardware and emerging mobile/internet connectivity is a no-brainer, the success of such integration depends on understanding the market fundamentals of hardware and software complementarity. The responses of the toy industry thus far have been ineffective in stopping the decline of sales. This paper takes a closer look at the issue by conducting a brief survey of the traditional toy industry and trying to identify the key drivers of success and failure of such toys. We then use a few tools of marketing research to explain how traditional toy makers can leverage information and mobile technologies to re-establish themselves in a sustainable growth path.

Keywords Mobile Computing Toys · Marketing · Toy Market

Introduction

Children's toys have become increasingly sophisticated over the years, with a growing shift from simple physical products to toys that engage the digital world. Consumers attracted to products in the emerging digital medium are demanding more convergence and interconnectedness. Toy makers are seizing this opportunity to develop products that combine the characteristics of traditional toys (such as dolls, cars, building blocks, etc.) with computing software and hardware. Many of these toy makers are also leveraging emerging trends in mobile computing and consumer

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ownership of mobile devices in order to enhance the experience of users and to increase toy sales.

In this study, we focus on this emerging mobile computing toy category that combines traditional toys with mobile computing functionalities. For the purpose of our discussion, we will term it "the mobile computing toy" category (hereafter MCT). For traditional toy companies, as the global growth of traditional toys slows, this new product category holds immense promise to restart this growth engine. Similarly, for mobile device makers, this new product category provides an opportunity to apply their know-how to a completely different, unexplored market.

The purpose of this study is to discuss marketing issues and implications of MCTs. The objective is to outline some of the key challenges facing MCTs and offer suggestions for overcoming some of these challenges. The paper is organized as follows. First we define and outline a history of toys. Next we provide our analysis of the current state of toy marketing. Based on our understanding of the role of toys, we then delineate their key characteristics. Finally, we discuss core challenges facing businesses that may develop new toys in the MCT category and then provide relevant insights into potential marketing strategies.

In terms of providing strategic insights, we should mention that from the outset, we are surprised by the lack of extant literature addressing MCT marketing and toys in general. So, rather than relying on existing literature to structure our arguments, we will rely on analytical marketing and business tools to provide insights into building successful MCT businesses. With this goal in mind, we start by outlining some of the key elements found in the most successful toys. We then use analytical tools from marketing and examples from other successful business integrations to develop our strategic recommendations.

A Brief History of Toys

A toy is defined as "a small representation of something familiar, as an animal or person, for children or others to play with or plaything."[1] The purpose of toys is to entertain, develop motor skills, improve the process of imagination, and enhance social skill formation. For these reasons, decisions to purchase toys depend not only on children, but also on their parents. So, for any toy to be successful, it has to have the ability to influence parents and children at the same time. Although toys are, in general, targeted towards children, the majority of toys are also aimed at parents. For the purpose of this paper, we will focus on toy marketing towards children.

To understand the basic characteristics of toys, we need to understand their evolution. The history of toys is as old as the history of human civilization. The earliest evidence of toys is found in archeological sites (Mann 1975). These toys were largely made from natural materials such as clay, sticks, and rocks. It is likely that prehistoric families had toys of animals, toy weapons to play-hunt these animals, and representations of mythical characters. These toys not only helped children en-

[1] As defined by Dictionary.com at http://dictionary.reference.com/browse/toy

tertain themselves, they no doubt helped them to develop skills and to role-play adult activities, while emphasising/reinforcing traditional gender roles. Successive excavations reveal that children played with dolls and balls in ancient Roman times.

It should be noted that many children's toys did not change much in terms of form over the centuries. As such, the modern toy industry emerged after the Industrial Revolution with the introduction of new manufacturing technology. For example: dolls were used as toys in many ancient societies. But dolls have evolved as technology evolved over many centuries, especially after the rapid industrialization that allowed toys to be mass-produced in factories at low cost (Brown 1990). In the last 20 years, technology has led to development of toys with new forms and connectivity. Toys such as electronic and computer games are increasingly popular among children. In recent years we have also seen evolution of computing devices as toys. For example: smart phones such as the early BlackBerry were utilitarian devices for adults to communicate, but with the introduction of the iPhone, smart phones suddenly become a device to improve productivity *and* a toy for both adults and children. Subsequently, tablets became the next computing product to cross over from a product for productivity to a toy. These cross-overs from utilitarian information technology products to toys have created immense opportunities for information technology firms and toy manufacturers to innovate and collaborate to change the landscape of toy markets. We have already seen examples of such combinations with the introduction by traditional toy manufacturers of LeapPad and Innotab tablets for children. In fact, such tablets have become the number-one gift to children in the UK and in North America as other toys struggle to generate growth in sales (London 2012). In this paper, our focus will be on MCTs that are not tablets. Next we outline the current state of the global toy market.

Current State of the Toy Market

This section provides an overview of the current state of the toy market. Globally, the toy industry is significant with annual sales of US$ 84 billion in 2012 (Euromonitor International 2014). The growth in toys is largely influenced by both the demand and the supply sides of the market. On the demand side, a growing population and rising incomes in emerging markets offer tremendous market opportunities for growth for both traditional toys and MCTs. On the supply side, the development of new products and e-commerce have generated increased sales and revenues for toys. This section is divided into three parts: (1) toy market size, per capita spending, and growth rate; (2) toy categories; and (3) major toy companies.

Toy Market Size, Per Capita Spending, and Growth Rate

On a global basis, the toy market is currently experiencing slow growth. Table 1 presents the toy market size, per capita spending, and growth rates by region in 2012. As seen in Table 1, North America is the largest toy market, followed by

Table 1 Toy market size, per capita spending, and growth rate by region in 2012. (Sources: Euromonitor International, Passport, 2014)

Region	Market size (in billions of US dollars)	Per capita (in US dollars)	Growth rate 2011-12 (%)
Asia Pacific	20.36	5.2	4.0
Australasia	1.67	61.2	0.4
Eastern Europe	5.39	16.3	7.1
Latin America	10.43	17.4	11.0
Middle East & Africa	4.86	3.8	6.6
North America	21.52	61.7	−0.5
Western Europe	19.96	40.8	−2.0
World	84.19	12.0	2.4

The world total is slightly greater than the sum of all regions due to rounding

Asia Pacific and Western Europe. It should be noted that the strongest growth rates were in Latin America (11.0%), Eastern Europe (7.1%), the Middle East and Africa (6.6%), and Asia Pacific (4.0%), while the toy markets in both North America and Western Europe remain stagnant with negative growth rates. In essence, global growth has been driven by emerging markets (e.g. India, China, and Russia) as the sales of toys continue to decline in developed economies. Based on the current forecast, the Asia Pacific region is expected to surpass North America as the largest toy market by 2014. In 2012, China became the second-largest toy market after the US (Euromonitor International 2014). With an impressive growth of 11%, China was the most rapidly growing toy market during 2012. In Eastern Europe, Russia accounted for almost 60% of the toy market. Thus, the emerging markets of China, India, and Russia offer tremendous growth opportunities for MCT products.

Toy Categories

The toy market is highly gender-segmented (Auster and Mansbach 2012). Upon entering a toy store, one sees immediately which toys are targeted to girls versus boys based on the color scales: pink shades for girls and a mix of green and browns for boys (Sparrman 2009). Table 2 presents a summary of selected toy categories by

Table 2 Selected toy categories. (Sources: Based on information from several toy retailers)

Category	Boys	Girls
Action figures	Toy soldiers, Star Wars	Disney Princess, Furry Boom
Arts and crafts	Doorknob hanger, crayons	Paint 'n' sparkle, play-doh
Construction toys	Legos, blocks	Toy kitchen, toy store
Dolls and accessories	King Kong doll, Buzz Lightyear	Hello Kitty, barbie doll
Dress-up clothing	Superhero, cowboys	Ballerina, princess, barbie
Games and puzzles	Trivial pursuit, battleship	Rummikub, Candy Land
Model vehicles	Toy cars, fire trucks, planes	Barbie bicycle
Sports	Ice hockey, basketball hoop	Figure skates

gender. Boys' toys include action figures, soldiers, Star Wars, Legos, superheroes, cowboys, cars, fire trucks, and planes. In contrast, girls' toys include toy kitchens, Hello Kitty, Barbie dolls, princess items, and paint 'n' sparkle. The amount of toys a child owns has increased from a few toys during the first half of the twentieth century to hundreds of toys by the end of the century (Sandberg and Vuorinen 2008).

Major Toy Companies

The global ranking of toy companies is presented in Table 3. With sales of more than US$ 10 billion, Mattel is the largest toy company with the highest market share of 12.4% in 2012. Several companies (Bandai Namco, Hallmark Cards, VTech, and MGA Entertainment) were able to maintain their relative market shares between 2008 and 2012. The performance of Lego is impressive, as the company increased its market share from 3.6% in 2008 to 6.3% in 2012 due to the success of its construction sets for each age group. All these major toy makers already have MCT products. Moving forward, the biggest challenge for them will be the integration of mobile capabilities in their traditional toys without sacrificing the current level of satisfaction among users.

It should be noted that this is not the first time toy makers have evolved and incorporated new technologies in order to keep products relevant to consumers. As such, the toy market is a dynamic one with constant changes due to globalization and technological advances. On the consumer side, we have witnessed a convergence of consumer tastes and preferences for toys in different countries. When a new toy appears in the North American market, consumers in Asia and Latin America demand the same product in their own countries. On the production side, a number of toy companies have shifted their manufacturing activities to Asian countries such as China and Thailand in order to take advantage of lower costs.

Next we discuss basic characteristics of toys to formulate insights into how information technologies can be successfully incorporated into traditional toys.

Table 3 Global toy shares by toy companies (in percentage; Sources: Euromonitor International, Passport, 2014)

Company	2008	2010	2012
Mattel Inc.	12.3	12.1	12.4
Hasbro Inc.	8.3	8.1	7.6
Lego Group	3.6	4.9	6.3
Takara Tomy Co. Ltd.	2.8	2.9	2.6
Bandai Namco Group	2.2	2.4	2.3
Hallmark Cards Inc.	1.4	1.6	1.6
VTech Holdings Ltd.	1.1	1.2	1.3
MGA Entertainment Inc.	1.3	1.3	1.2
Spin Master Ltd.	1.0	1.5	1.1
LeapFrog Enterprises Ltd.	0.9	0.9	1.1

Characteristics of Toys

Toys play an important role in the development of children (Auster and Mansbach 2012). Although toys have changed over the years, the basic concept remains the same. Toys are used to stimulate pretend play, the development of cognitive skills, and social play with other children (Blakemore and Centers 2005). It should be noted that the distinction between a toy and a utilitarian object is subtle. In the case of a smart phone, parents can use it as a device to improve their work productivity and the children can use it as a toy. Hence, a device can be both a toy and an object to perform certain tasks. From our perspective, a device becomes a toy when it generates pleasure in the process of its utilization. To provide insights into the toy development process, we need to understand the basic characteristics of toys per se. As such, the characteristics of toys play a significant role in the marketing of these products to consumers (Auster and Mansbach 2012). Goldstein et al. (2005) discussed extensively various characteristics of toys and games. Based on their summary we highlight three basic characteristics of successful toys:

1. Scaled Representations: Almost all successful toys are miniature representations of characters or tools. These characters and devices can be either real or mythical. For boys, toy guns are a classic example of scaled representation of weapons. On the other hand, for girls, dolls are a great example of miniature humans. MCT provides an excellent opportunity for toy makers to introduce scaled representations of new products.
2. Repository of Imagination: Almost all successful toys provide players the opportunity to construct scenarios using imagination to immerse themselves in specific role play. This is the reason why toys based on *Star Wars* and other movies are extremely popular. MCT with their potential multi-media capabilities can easily enhance users' ability to imagine and create scenarios.
3. The Possibility of Creative Destruction: Almost all successful toys are malleable. Players can break them apart or mold them based on new, creative ideas. The most enduring and successful toys become timeless because of this property. A classic example of this property is embedded in the most successful toy company of the last century, Lego. Lego allows players to build objects in infinite combinations, play with the constructed object, and later build a new one. By sticking to this basic property of toys, Lego has become one of the most enduring toy companies of all time. Given the complex nature of integration of hardware, software, and traditional toy form, existing MCTs have not been able to develop products that can be creatively reconstructed and played with in many different forms. We believe this is one of the biggest challenges facing makers of MCTs.

For MCT to be successful, toy makers need to focus on these three properties. The challenge is developing a highly complex toy that can embody these three elements while also providing significant enhancements to the user experience. The challenge arises from the fact that MCTs are a marriage of software, hardware, and traditional toy concepts.

Another big challenge for MCTs will be breaking the gender barriers. The challenge in this context is twofold. First, it is generally argued that there exist gender differences in how information technology is perceived and used as well as in the actual usage rate (Jackson et al. 2008). Second, toys are historically gender-specific. In general, boys' toys are more violent, competitive, exciting, and dangerous compared to girls' toys, which are more physically attractive and associated with nurturance and domestic skills (Fisher-Thompson et al. 1995; Blakemore and Centers 2005). However, over the years there is evidence of girls wanting toys typically classified as "toys for boys" and vice versa (Marcon and Freeman 1996). Until now, video games and similar toys have been more successful with male than female consumers. For MCT to achieve its full potential, it needs to figure out how to make these toys more accessible to female consumers.

Toys and Marketing Research

Most studies on toys have largely focused on historical, educational, and psychological issues. The four major research areas are: the history of the toy industry (Brown 1990, 1993; Cross and Smits 2005), toys by gender (Fisher-Thompson et al. 1995; Blakemore and Centers 2005; Auster and Mansbach 2012), child development (Hornik et al. 1987; Sandberg and Vuorinen 2008), and toy safety (Taylor et al. 1997). There are only a few studies on toys in the business literature. Several studies have focused on the supply chain (Law and Chan 2003; Egels-Zanden 2007; Chan and Chin 2007) and toy recalls (Beamish and Bapuji 2008; Teagarden 2009).

In an attempt to understand the toy market, Hogan (2007) developed a conceptual framework to explain how trust is created between toy companies and parents. Lin (2010) examined the relationship between consumer personality traits and brand loyalty involving toy purchases. In a recent study, Gardner et al. (2012) examined the role of advertising and parents' perceptions of advertised toys.

The lack of research on marketing of toys is somewhat surprising given the large size of the toy industry. The next section discusses challenges and marketing strategies for MCTs using key strategic concepts of marketing management.

Challenges and Marketing Strategies for MCT

Based on the basic definition of MCTs, this category of toys has the potential to be highly successful in the market. Conceptually, these toys are a marriage between two very popular product categories with children: software and related computing hardware, and traditional toys. On the computing side, according to Common Sense Media, 38 % of children under the age of 2 used a mobile device for playing games, watching videos, or other media-related purposes in 2013. In 2011, that number was

only 10 %. And by the age of 8, 72 % of children have used a smart phone, tablet, or similar device. In terms of growth, in 2013 children in the 0–8 age group spent an average of 15 min a day using mobile devices; that's up from 5 min a day in 2011 (Common Sense Media Press Release 2013). In fact, tablets and other mobile devices have become so popular with children that they, in fact, are competing for the share of spending for children's gifts. In 2013, tablet computers designed specifically for kids were the second most popular gift in the UK.

On the other hand, traditional toys, although still popular, either have stagnant sales (especially in the US market) or significantly slower growth (in the global market). Hence, the traditional toy industry could gain a competitive advantage from this marriage with technology rather than the other way around. And the success and failure of this, like in any marriage, will depend on whether the result (mobile computing + traditional toy) brings an improved toy-user experience than if the two remain separate. In the case of any new MCT, the experience of the users has to be better than the experience they could get by using each of the components separately. This has been a challenge in many other industries. Before Apple came up with the iPod, the hardware, software, and music industries struggled to develop a product that enhanced the value of all three components. So, if a company is developing a toy with mobile computing components, then the experience of the users with the new MCT has to be better than if the users were just using the toy itself. To present our insights regarding how to overcome this challenge, we will focus on the "4Ps" of marketing strategies: product, price, promotion, and place.

Product We have not yet seen a blockbuster product in this category from the traditional toy manufacturers. Every major toy manufacturer is involved in developing and introducing products in this category. Launched in 2012, *Apptivity* by the Mattel line of toys is a classic example.[2] In this case, Mattel is targeting mobile device owners (tablets or phones) by developing apps that can enhance the gaming from a traditionally designed toy (such as a figurine). Similarly, the Hong Kong-based toy company *Apptoyz* has been in the business of enhancing traditional toys that can interact with mobile device-based apps.[3] In both these cases, they are relying on the popularity of Apple's mobile devices. Certainly this approach in developing MCT has distinct disadvantages:

1. Products cannot be mass-marketed, as only kids with access to mobile devices will be able to play with these toys. Note that even device-owning parents may not be interested in buying these toys for their children because they may/will have to share their mobile devices. In terms of accessibility, as more and more consumers acquire smart phones and tablets, the challenge of mass marketing will potentially be resolved.
2. Relying on another party to build or enhance your product creates tremendous opportunities for hardware or software makers to get into this business themselves if these toys become highly profitable.

[2] For further details, please refer to: http://www.mattelapptivity.com/

[3] For further details please refer to: http://www.apptoyz.com/

3. In terms of ease of use, these toys add another layer of complexity or cost of use. For a user, this cost has to be lower than the enhanced benefits from the MCTs. Otherwise success will always elude MCT makers.

In the toy industry, licenses are important for classic toys such as Star Wars, Spiderman, Disney Princess, Hello Kitty, Barbie dolls, and so on. New toys cannot be successful without the protection of global licenses. It should be noted that toy manufacturers can develop toys with mobile computing abilities built into them. But such a strategy will certainly increase the cost and thereby price of these products significantly. One approach that can significantly lower the cost of such a strategy is to first develop a mobile device that can work with multiple games. But again, such a strategy can be risky and expensive to develop. For this reason, we believe that in the near future, most MCTs will rely on this marriage of convenience between mobile devices and traditional toy forms. It is expected that new product development will be centered on smart phones and children's tablets involving some classic toys such as Star Wars, Spiderman, Hello Kitty, and Barbie dolls.

Promotion Since these toys are part of a completely new product category, marketing will play a key role in the successes and failures of these products. Potential customers need to be convinced of the benefits of these toys. Most households with children already own toys and, at the same time, own multiple mobile devices. Children are already using the toys and, in some cases, mobile devices separately for their enjoyment. The challenge for the marketers is to convince children that a combination of these two products can be more enjoyable. Similarly, promotional campaigns need to convince parents to allow children without access to such mobile devices to either own or borrow the devices to play with these toys. The value proposition to the children is easier to make, as these toys are novelties for them. On the other hand, the value proposition to the parents needs to go beyond the argument of enhanced enjoyment for the children. Since the emerging economies are the fastest-growing regions for toys, toy companies should focus their marketing and advertising for MCT products in these geographical areas.

Place Because MCTs are a completely new product category within the toy industry, toy companies need to think in terms of revamping the marketing channels to sell these items. They need to be delivered using full-service retailers or any other channel where full-scale demonstration can be implemented. Apple's strategy of setting up its own store to sell its category-defining new products can certainly be used as a template to sell new toys. There is a growing trend of shopping for toys in grocery retailers and drug stores in developed countries. However, the importance of traditional toy stores (e.g. Toys "R" Us) should not be overlooked.

Price In the case of pricing, toy companies can certainly innovate and forgo standard pricing strategies of traditional toys. First, given that these toys will need two components, toy and app(s), toy makers can price these two components separately. Second, toy companies can devise strategies to release enhancements of apps over time. Such a strategy will help toy manufacturers price these enhancements separately, thereby creating a future revenue stream from the sale of a single toy. Third,

toy companies can also introduce bundle pricing for the mobile computing toys along with small action figures or vehicles.

In terms of segmentation given the gender differences in toy preference, makers of MCTs need to make sure that toy development incorporate these distinctions and adequately considers how male and female consumers interact with toys. Given that the video game industry is well known for its lack of market reach to female consumers (Hartmann and Klimmt 2006), developing toys that will appeal to girls will take some thought because mobile computing toys critically rely on similar interfaces and technology as the video game industry.

Concluding Remarks

The toy market is currently at crossroads. With the emergence of MCTs, the rate of innovation in toys has increased significantly, creating a sudden potential for information technology firms to enter toy markets on their own or develop joint ventures with traditional toy manufacturers. Hence, MCTs hold immense economic promise not only for traditional toy makers, but also for mobile software and hardware companies. However, this promise has yet to be realized. One reason is that there is a lack of an integrated product that would function such as the Apple iPhone in the mobile phone category. Another possible explanation is that the products are not generating significant new benefits for consumers.

Toy companies and the mobile computing industries need to think beyond just the novelty factor to create enduring value propositions for consumers of MCT products as opposed to offering only niche products or fads. The market players also need to carefully consider the value propositions for the parents and not only the child users. It is hoped that this paper provides broad foundational guidelines from a marketing perspective on how to develop and sell MCT products.

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