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Design management in the toy industry: Case studies on design insertion for the development process in Brazilian toy companies

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Abstract
Design is assuming more strategic roles in the industry, bringing different approaches to the development of new products that enables innovations and higher acceptance. Like other segments, the toy industry is also modifying to meet new demands, seeking to develop games and toys aligned with the contemporary child. To improve the quality of the national toy, design insertion has been stated as a desired goal. However, there are not significant reports in the literature about how it is integrated in the segment. This study aimed to evaluate the integration of designers in the development process of new products of three different Brazilian toy companies that acted as case studies. Based on Design Management (DM) and Product Development Process (PDP) Models, we implemented a new model that aided in organizing and analyzing records of the companies' structures and development processes. Results indicated the difficulties and improvement points to insert Designers in a formalized process, being those located mostly on the initial planning, product prototyping, and post launch stages. A recent increase in design acceptance and usage, however, was noted, with Design being considered as directly related with the quality increase of the company's products.

Keywords: design management, toy industry, development of new product, Brazilian industry, industrial design.

Introduction

In recent years, different industrial segments have been reconfiguring their product development processes to adapt to society demands, with the market now demonstrating a rapid advance of technology and dissemination of information. Faced with these new demands, Design has been reconsidered as a strategic agent in business, bringing different approaches to new products development, geared to the needs of users, and thereby enabling higher acceptance rates. Like other segments, the toy industry is also facing a challenge that is developing products better aligned with the contemporary child while facing great competition, new technologies and rapid information changes.

The Brazilian toys segment is currently growing as a market, estimated to become the fourth global traditional toy market by 2017 (ABRINQ, 2016). However, as noted by the latest report performed by the Brazilian Toy Manufacturer's Association (ABRINQ, 2016), imports still covers most of the market share, representing today more than 50% of its income and highly surpassing exports. Among the reasons that justify the low representation in both local and international market, lack of design and innovation have been pointed as some of the main causes.

Due to this situation, the secretary of foreign trade (*Secretaria de Comércio Exterior* - SECEX), alongside with company leaders of Brazilian toy companies, has promoted a series of meetings that resulted on the elaboration of new objectives and goals, that aims to contribute to the growth of the segment (Mefano, 2005). As reported by Mefano (2005), among these objectives, the secretary highlighted the need of a program for the creation, development and improvement of the Brazilian toy, being Design investment a key factor for achieving it. However, until present date, there were not significant reports in the literature regarding the integration of Designers on this segment resulting in many doubts about the actual scenario.

"Design has an assigned role in the development of various products, having its own project methodology that, traditionally contributed in matters such as aesthetics, usability, costs, and other factors related with product value attribution" (Dziobczenski, 2012, p. 15). Regarding toy design, while not yet a widely recognized or consolidated activity, a classical definition by John Heskett (1997) states that they are the professionals responsible for the development of playful artifacts, being that, one of the many ramifications of industrial design.

The lack of references, definitions and the overall genericity regarding the toy design activity represents some

of the barriers regarding the integration of Design in the Brazilian toy market. On the other hand, this situation also gives opportunity for approaches that can aid on the integration of designers while finding specific peculiarities on the process of designing toys.

In this sense, Design Management (DM) is presented as a potential practice and research field to assist in the dissemination, understanding and integration of design within companies to achieve multiple goals. According to Mozota *et al.* (2011), Design Management is the implementation of design as a formal program inside a corporation though the communication of its relevance to meet corporate objectives and through the coordination of design allocated resources. Kathryn Best (2012) also determines that for its total implantation, design activities must be aligned within every organization plan and process, therefore, we define those as key points to be investigated to find about design integration.

For understanding both plans and processes, our research found to be valid, the usage of principles regarding Product Development Process (PDP). Griffin (2002) defines the Product Development Process (PDP) as a group of activities and tasks clearly defined that describes the usual ways in which a product development happens. The process delineates the order and sequence of activities, indicating the main responsible for each. For Ulrich and Eppinger (2012), product development can be described as a group of activities that begins with the market opportunities perception and ends with the production, sale and delivery of the product. While considering that a PDP model may not fully represent all the reality variables, we find it important for understanding the design relation inside a process.

For this research, we based our analyses on models and principles from both the PDP and Design Management Fields, such as the Design Management Ladder further described on the literature review section. By taking this approach, we performed a comparative analysis of three different toy companies that integrated design teams in the development process, understanding the actual integration scenario, challenges and specifications of the toy industry. As a main goal, we aim to comprehend the current demands and design practices in the Brazilian toy sector, a sector that, while not deeply explored in the country, has a high growth potential. Therefore, the research aimed to answer the following question: *How are designers currently inserted in the development process of new products on Brazilian toy manufacturers?*

Literature review

Toy industry and Brazilian market

The toy industry is a segment dedicated to the production of playful artifacts for children and youngsters, being playfulness. According to Shaftoe (2013), as new categories of products can come every year, playfulness is still the main element for defining this industry nature. With a value of approximately U$ 84 billion (ABRINQ, 2016), this industry is considered to be competitive yet easy to ingress, composed mostly by small and medium companies, but with a few large companies on top of the international trades. Another strong characteristic of this segment is the production concentration at the Asian Region, under leadership of China, which is responsible for over 70% of the worldwide production (ABDI, 2011). Nowadays, according to Pathak (2013) the industry has been changing, integrating new technologies and new ways of perceiving the user, being also highly dependent of the entertainment sector such as cartoons and movies releases.

On this scenario, the Brazilian Toy Industry plays mostly a local role, moving around U$ 5.78 million on the year of 2015 (ABRINQ, 2016). It is composed mostly of plastic transformation and import small and medium sized companies dedicated to the internal market. With 85% of the companies located on Sao Paulo District there is also not many large size representatives. According to the ABDI report (2011), the lack of large size companies, together c with a focus on a local market represents the main barriers for the international competition of the segment. According to Mefano (2005), globalization brought an increasing competition to the local industry that lead to a restructuration process, where the companies had to adopt a series of measure to increase quality and productivity such as human resources training, stronger participation in international fairs and more rigorous safety certifications.

Also according to Mefano (2005), a series of meetings of toy industry representatives with the secretary of foreign trade (*Secretaria de Comércio Exterior* – SECEX) resulted in the elaboration of goals that could contribute to the development of the sector. Among the goals were intents to increase the nationalization index of toy projects, to increase international competition levels and open space for exportation, and to increase efforts dedicated to innovation in products. Alongside with investments in the modernization of the industrial field, the secretary of foreign trade recommended a program for creation, development and design improvement of the national toy, being a key to institute Brazilian designs, reducing external dependency.

A newer report, provided on 2011 by the Brazilian Agency of Industrial Development (ABDI, 2011), reinforced the industry needs of identifying innovation mechanisms and of capacitating itself on the design of new products, being those crucial to elevate the product level and qualities. The document also takes in consideration, however, that at short and medium terms, policies regarding surveillance, certification and taxes should become clearer to provide stability to the sector.

With imports representing in 2007 over 61% of the market share and decreasing to 45% percent in 2015 (ABRINQ, 2016), some of the policies defined by the SECEX meetings are being attended, but much is still desired as exports are still representing approximately 3% of the imports value (ABRINQ, 2016). While it has been noted a quality increase of the national toy that privileges investments in design, there is few yet known regarding the design adoption and policies of the national companies. The research considers now to be a key moment to review the design relation as to provide stronger integration in the sector and a better position on the international market.

Toy design definitions

One of the definitions of the activity of "Play" describes it as an act of amusement, joy and relaxation.

According to Kamisaki (2011), that would be the most important activity for children when they are not dedicated to their survival needs. The Larousse dictionary (Houaiss, 1980) consider toys as artifacts directly related with play and amusement of childhood. Reinforcing that, the International Council of Toy Industries (ICTI, 2013) defines that, if play is the main job of children, Toys would be the ideal tools for this activity.

The definitions of what a toy design activity are still very broad, not having much literature consensus regarding required activities, delimitations, shapes, methodologies of even implications of the act of projecting toys. Kamisaki (2011) and Mefano (2005) indicate a stronger relation with the play and development concepts rather than with the project of physical artifacts. Kamisaki (2011), for example, states that projecting a game or a toy is simply develop something that giver the user (children) information that may be useful for adulthood. However, they also state that**,** due to the increase of demand and of toy manufactures around the world, there is also a need of training qualified professionals that can interrelate theory, practice and interaction with other field for developing better toys.

In Brazil, specialization for toy Design is still recent, having only a few dedicated postgraduate courses. Mostly, the professionals dedicated to this activity considers themselves autodidacts, learning through professional experience and books (Mefano, 2005). These professionals tend to take in mind the toy importance on the development of children and their different interests, showing also ergonomic notions as to adequate products to children's size. Across the world, however, there are a few Toy Design Schools such as the one presented in the Fashion Institute of Technology (FIT, 2017). The program reinforces skills and knowledge to be learned as a toy designer, such as:

- developmental psychology;
- soft toy and doll design;
- game design;
- the toy industry: methods and materials;
- anatomy for toy designers.

Many of the required skills for being a toy designer can also be considered as general skills for a designer. However, there is little doubt that the peculiarities found on this activity, asides from being related with the history of the segment, are strongly related with the peculiarities of children.

Design management principles and models

Design Management (DM) is a term originated on England at the year of 1966 by Michael Farr, who proposed a formalization and management of design activities as a way of improving efficacy of its processes and a better relationship between design and companies. However, due to the new production challenges, only recently, DM has started to grow as a field, not yet fully defined. According to Mesa *et al.* (2013), the definitions of DM, such as the ones of design, can vary from specific to broad definitions. At a general level, DM can act as an administrative face of design business and processes, involving those to attend to the companies' objectives. On a specific level, DM is an approach that aims to integrate design, innovation, technology, management and clients to offer competitive advantage through economic, social, cultural and environmental factors.

Among the main references for the field, Mozota *et al.* (2011, p. 95) describe DM and its role as "the implementation of Design as a formal activity program inside a corporation through the communication of its relevance, the coordination of design resources and through achieving corporate goals of different levels". This description indicates guidelines for the activity under different companies. Acklin and Hugentobler (2007) also describe three acting points that can be better implemented through DM: (i) Strategies and corporate identity considering market and user needs; (ii) Organizational culture regarding design and creativity values that can foster innovation in environments; and (iii) development of new products by joining design capacities with the knowledge of other fields.

Demarchi *et al.* (2011) consider that DM should also disseminate and guide design inside a country, in a way to be effectively as a competitive resource that can encourage companies to be more flexible, take more risks, and be more user oriented. That said, Mozota *et al.* (2011) determine two main goals that, at long term, can contribute to a better design insertion on organizations: train partners/managers and designers, implicating the familiarization of managers with design and vice versa; develop methods to better integrate design on a corporative environment.

This brings to one of the current challenges of the DM field, that is, understand how design and DM activity integrates on different companies to attend their needs. As there are many factors to be taken in consideration, assessing DM capabilities is still a considerable challenge. However, on the last years, different DM assessment models have been developed, and, although they cannot be directly applied in a company without consideration of the surrounding context, they still hold some key elements that can aid on this activity. For this research, we based ourselves mostly on the "Design Management Ladder (DML)" by the Design Management Institute of Europe (DME) and the "factors to be considered on the implementation of design on an association" (FCIDA) developed by Minuzzi *et al.* (2003).

Based on innovation management principles, the model FCIDA considers three different points, being those: organizational domains, regarding the surrounding environment and the association culture; the level of activity required for Design; and the desired design implementation for the association. We adopted the FCIDA model partially, considering mostly the organizational domains points such as: cultural aspects; positioning strategies; external environment; managing processes; behavioral processes; Technical aspects; information technology; and internal structure.

The Design Management Ladder Model, as seen on Figure 1, evaluates a company through five factors regarding design (Conscience; planning; process; expertise; and resources) to define different levels for design management activity (Lack of design; design as project; design as process; and design as culture). The reliability of the model was discussed by Kootstra (2009) and, although is considered mostly as a quantitative tool, we considered their

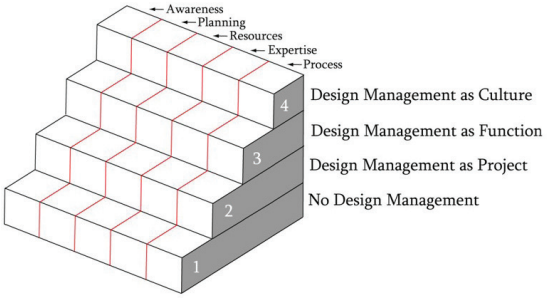

Figure 1. Design management staircase.

Source: Kootstra (2009).

base evaluation factors to be applied on qualitative nature researches. Through the combination of both presented models, we believe to achieve a suitable DM assessment model for toy companies, although they do not fully cover a development process.

Product development process and new product development

According to Dziobczenski (2012), products and utensils are being developed since the beginning of civilizations, however, the study of this process systematically as a formal field began only on the sixties, becoming bigger on the decade of 1980 as globalization started to present a strong influence (Back *et al.*, 2008). Considering the existing processes to be a fundamental part for understanding the Design integration and the performance of companies, the research adopted some literature regarding Product Development Process (PDP) and New Product Development (NPD). The author Griffin describes a PDP as:

> *[...] a set of tasks and stages clearly defined that can describe the usual ways on which a product development occurs. The process delineates the order and sequence of task, indicating who is responsible for each of them (Griffin, 2002, p. 242).*

Figure 2 shows a generic model that represents a basic PDP description is was developed by Ulrich and Eppinger (2012). On the model we can see six different stages that begins on the phase 0, describing planning activities. Mineiro (2011) adds stating that on a product development cycle, we need to address both strategic and operational questions regarding the formalization and following of every activity under a defined schedule. There is also, however, a strict relation between operation and strategy, as many operational considered questions are, actually, part of the planning and coordination. The authors defend a cycle of strategy and operation for any process.

Although related with Product Development Process, New Product Development is a field that does not necessarily imply the systematization of tasks and activities, dealing mostly with factors and strategies that may assist on the generation of a novel and successful product. According to Capra (2011), many authors debate over which factors can actually determine the success and

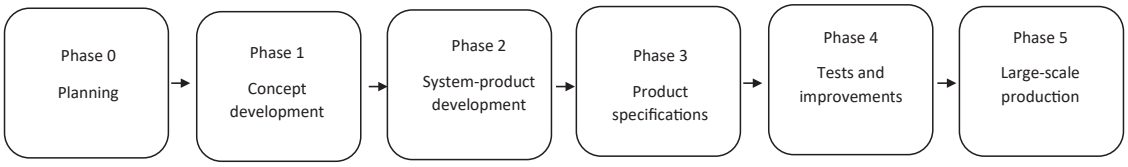

Figure 2. Generic product development process.

Source: Adapted from Ulrich and Eppinger (2012).

Chart 1. Success attributes for NPD and design key questions.

Success attributes for NPD	Key questions regarding design
New product strategy	How is design utilized to make the company more competitive, user centered and innovative?
Leadership of product and process teams	Are there specific people for supervising the NPD?
Multifunctional teams and communication	How are designers integrated on different teams?
Upper management support and involvement	Does the upper management represent design?
User focus and involvement	Are users involved on product's development and tests?
Research/comprehension of market needs	What are the methods utilized to comprehend the market?
Financial analysis of business	What are the proceedings to evaluate design investment?
Preliminary market evaluation	Are market needs identified at the beginning of a process?
Preliminary technical evaluation	What are the proceedings to evaluate production requirements regarding their designs and resources

failure of a product, and even today, we still have much uncertainty over them. This may be so because, according to Cooper (2001), the success factors are invisible and hard to measure in any business practice. By performing a literature review over these factors, however, Hesselman and Walters (2013) defined 8 points as the most important for developing new products. By adding key questions regarding design, the Brazilian Design Center (*Centro Brasil Design* - CBD, 2014) elaborated a chart of these points and they were taken into consideration for this research.

Methodology

This research intended to analyze the integration of designers in the New Product Development (NPD) process of different Brazilian Toy Manufacturers. For achieving this analysis, however, we stablished some specific goals, such as mapping the Brazilian Toy industry scenario, to obtain general information about the segment and to find ideal companies for the research. Additionally, we needed to define methods and models to assess both the NPD process and the design integration of each company.

Defining that, we performed case studies on companies that integrated design, comparing them afterwards. According to Yin (2015), case studies are considered adequate in situations where the available knowledge regarding a study topic is limited, requiring in depth investigations about the phenomenon in its own environments. Although not conclusive, multiple case studies can help with the generalization of the obtained data. We gathered data through direct documentation of the companies' structure and processes, taken from visits at the companies' headquarters followed by semi-structured interviews with the designers, leaders of the development teams, and directors/CEO of the companies. On the following subsections, we can see more information regarding the chosen samples and regarding the research protocol that served as our assessment model.

Case studies selection

Due to accessibility and required time to perform in depth researches with working companies, we decided to base this research on a small quantity of case studies that could be representative for the Brazilian industry. Based on available data regarding companies' representability in the market (CBD, 2014; ABRINQ, 2016) we contacted over ninety companies through surveys. The choice of the companies was based on the following four factors:

(i) *Market time and relation with design:* companies with at least 10 years of market experience and at least 5 years of experience with design professionals were aimed.

(ii) *Function and value attributed to design:* Companies that integrated design mainly for toy and game development, attributing importance for this activity.

(iii) *Design structure:* companies that worked with design teams in specified departments. The Companies should have at least two graduated designers to compose a team.

(iv) *Availability for research:* Companies that would be available for participating in the interview and opening their research process.

By receiving the survey responses, we reduced the research sample to three companies denominated company B, C and D. Due to a commendable Design Background and immediate availability, we also chose a company, denominated "Company A" for a pilot test, aiding on the development of the research protocol. The following chosen companies, presented on Chart 2, are located on the State of Sao Paulo and are considered to have similar profiles.

Research protocol and assessment model VSPP

The research protocol was developed based on the two research objectives: (i), how is design inserted in the company structures to contribute to their development process; and (ii), in which design management level the companies are working. We based our model under the different assessment models presented on the literature review, being two from Design Management Field (DML, Kootstra 2009; and FCIDA, Minuzzi *et al.*, 2003), and the "Success attributes for NPD" presented by Hesselman and Walters (2013). The research then narrowed the key points from these models, reorganizing them under the four different categories further described.

(a) *Vision:* how the company understands design activity parting from their understanding of market, of the user needs and of their own history as a company. It englobes organizational contexts re-

Chart 2. Companies' profiles.

	Company A (Pilot only)	Company B	Company C	Company D
Size (according to jobs and profit)	Small size	Medium/large size	Medium size	Medium size
Market activity	5 years	45 years	28 years	60 years
Time with design	5 years	30 years	10 years	10 years
Main products	Digital Multi Touch games development	Board games and jigsaw puzzles	Board Games, puzzles, and plastic toys	Plastic toys: building blocks, dolls, castle sets
Main public	Young children inside school	Children, teens and Adults	Children of all age	Toddlers and Young children

lated to the environment in within the company is inserted.

(b) *Structure:* The physical and hierarchical organization of the company, understanding also the design department position within this hierarchy. IT evaluates new product development factors regarding team multidisciplinary, support and involvement of the high managers.

(c) *Planning:* from vision and market research, how the company plans their products and integrates designers in the process to develop their briefings with goals and desired design activities. It involves preliminary market evaluation, consumer involvement and utilized strategies to differ their products.

(d) *Development:* The stages starting after the initial product planning, finishing on production and re-

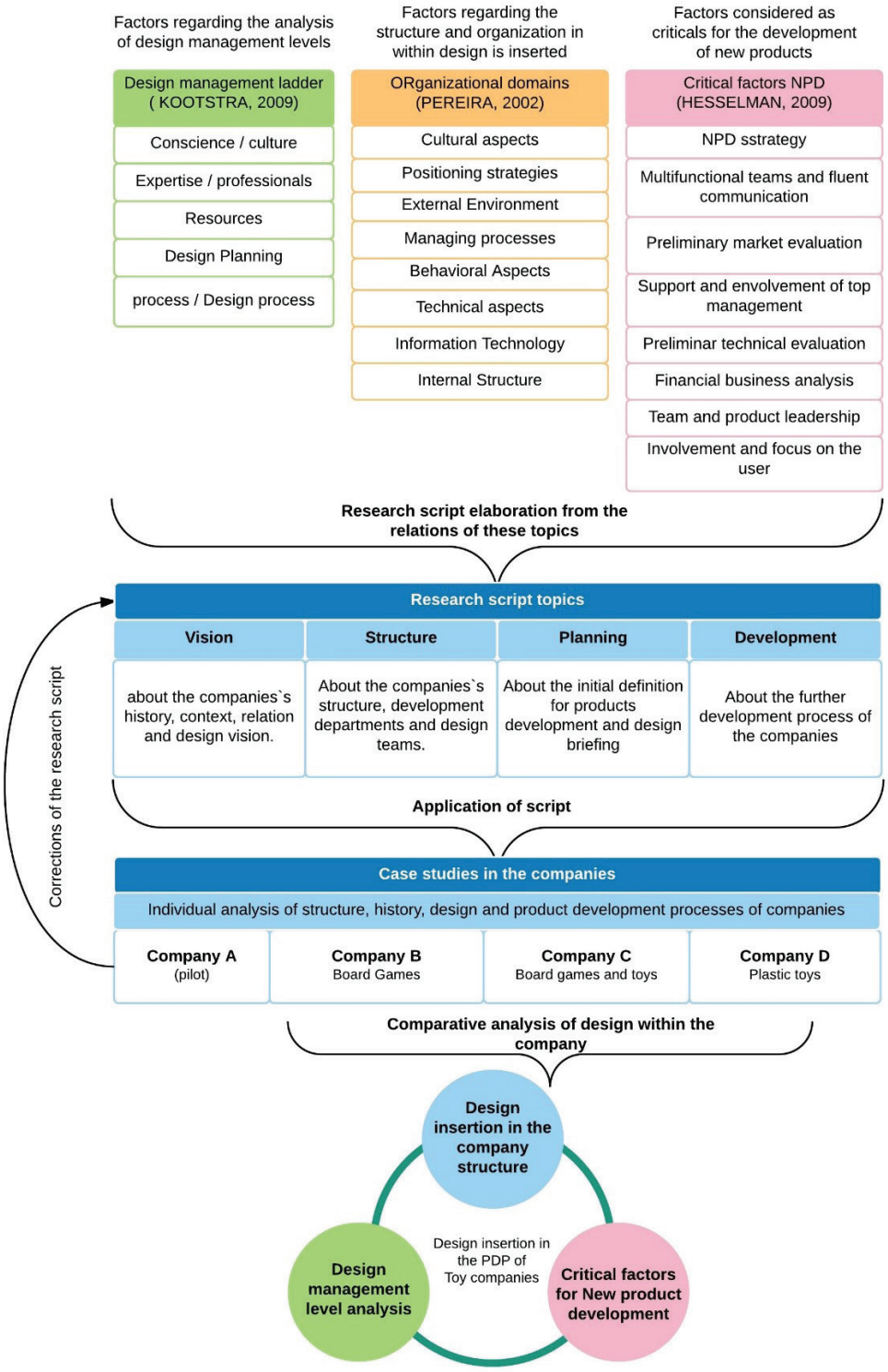

Figure 3. Research protocol.

lease, considering the stages attributed to design and overall design insertion within the process.

The key factors took from the models can be seen on Figure 3, alongside with the application on the companies and the desired results for the research. It is also valid to mention that the three companies have presented both common aspects and peculiarities in their process, bringing some difficulties for the comparative analysis. For the realization of this analysis and to make sense of the process flow, we adopted Ulrich and Eppinger's (2012) generic product develop process model, organizing the steps side by side,

Results

The results obtained from the researched companies were divided in the four topics defined by the research protocol: Vision; Structure; Planning; and Development. From the model discussion, we present data regarding the Design insertion and the Design Management Level of the companies.

Vision: Visions regarding users, products and design

The studied companies ranged were mostly medium sized enterprises already structured in the market for at least 28 years and currently segment leaders. All the companies worked with the same technology. Among them, carton paper and plastic. The companies also worked with an educative line for children aged 3 to 10 and all the companies worked with vinyl toys for newborns, finding strength in this new market segment. For the companies

On the other hand, the companies had different focus for their main product and presented different points of view for the contemporary toy. While company B seemed to integrate digital technology to board games, the company C positioned itself against this trend. Company D members believed that Digital and physical toys should be balanced, but did not present any investments for this kind of technology, being also mostly focused on the physical toys. The overall vision indicates resistance at some level to adopt or integrate new technologies.

Design services are considered as a new activity in the researched companies, with two of the companies having inserted designers in their development departments for less than 10 years. Among the reasons for explaining this change, it is highlighted the restructuration period many companies went through to face international competition, parting through the needs of developing better quality and unique products. Being a new element, design is considered to have a strong relation with innovation. Each company, however, had a different speech regarding design, with their definition standing between user communication, new product development and packaging development.

Structure: Design in the structure of the companies

For understanding the design insertion into a physical and hierarchal structure, a generic organogram of the companies was developed. The organogram, shown on Figure 4, considered mostly the development department and the design allocation inside said department.

On the three companies, design is represented through teams inserted in a multidisciplinary development department. It has been noted then a strong relation between design and marketing teams, with both usually on the same department. Among the main activities delegated to external and internal design, the companies have emphasized graphic design activities in the elaboration of arts and packaging. This reinforces the vision of design as a communication tool. Among design activities, there are three main activities for internal designers:

- management of external services from design studios;
- technical development for the packaging of the components;
- conceptual development for games and toys.

Among outsourced design services, companies request services from 3D modelers, Design Studios and autonomous illustrators for the development of exclusive arts or graphic pieces. According to the companies' members, outsourcing design can bring new visions for the company projects, while the internal design team has better communication and integration with the other departments as its main advantage.

Among the main design related investments on the department, companies mentioned the acquirement of new computers, software, plotters and printers. There is also a growing interest in rapid prototyping machines such as 3D printers. Investments on human resources such as professional training of designers, however, are not considered as strong activities on the companies. Regarding training, Company B states the preference of already developed professionals. Company D explains the lack of time and resources for dedication on training. There were also uncertainties on how to train toy designers, as there are few accessible courses.

Planning: Market researches, internal evaluation and design planning

The initial stage of product development begins through informal meeting between different members to evaluate the internal capacities of the company, their current toys in the market and the market demands. Afterwards, there is a formalized meeting with the same members to define lines and acquire licenses for development. Among the different methods utilized for the companies to research market trends and, consequently, the user, the answers were mostly:

- product analysis in national and international toy fairs;
- surveys in toy stores to follow product reception and trends;
- monitoring of popular franchises, comprehending user profile through them; and
- informal observation of new ways of plays and possible technologies for toys.

For assessing feedback regarding the internal capabilities of the companies, however, not many techniques were mentioned. Among them:

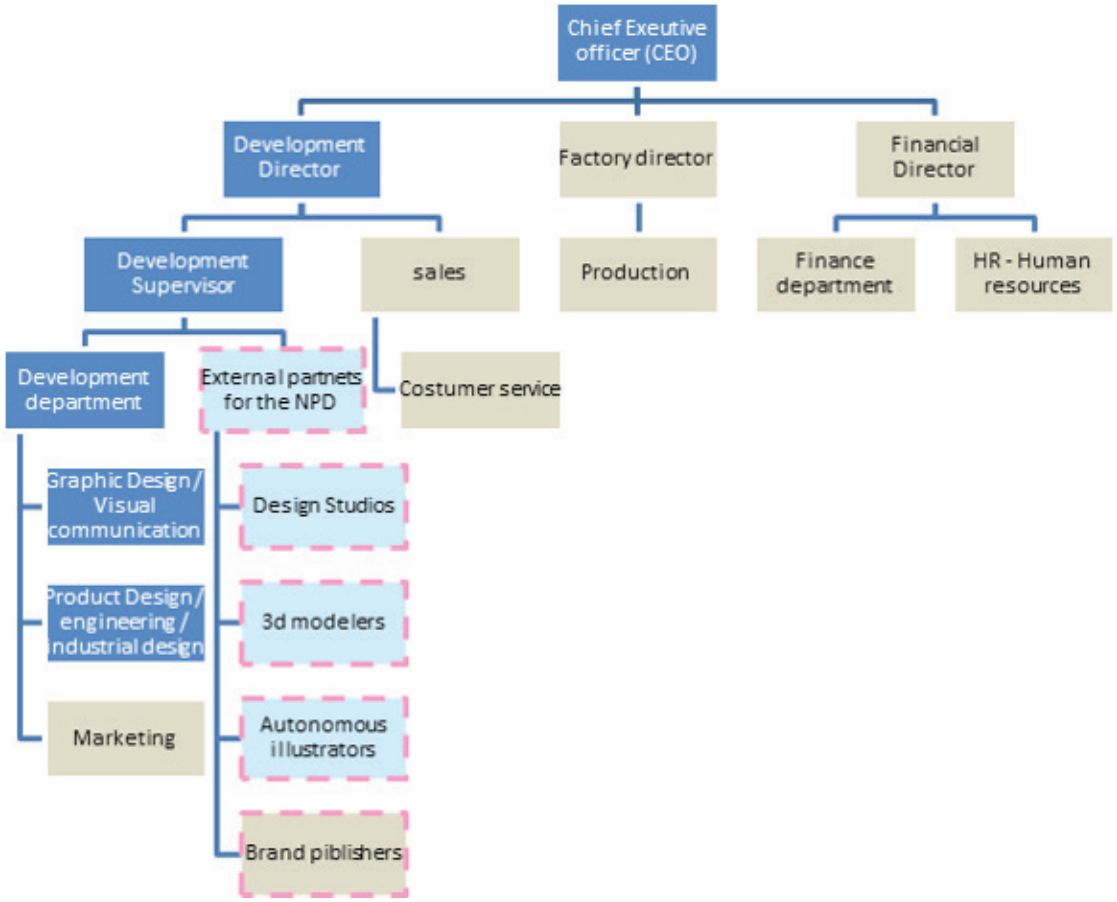

Figure 4. Generic organogram of the studied companies.

- sales and revenue data from resellers;
- quality and acceptation feedbacks through costumer services channels; and
- research companies: requested in only one company and working through social media surveys.

As the companies also work with distinct targets, the user is inconstantly considered through the planning stages. All the companies have reported high difficulty in inserting the infant audience in the planning stage. With that, considerations regarding the user are performed indirectly through sales data, play trends, and, mainly, popular licenses.

With the initial planning being performed by the upper management staff with supervisors, designers are not constantly involved in this stage. According to the companies, a design planning often begins after the management members have already decided a product line and concept. They mentioned, however, that an informal contribution of design, through joint researches with members of the marketing team, are also contributing in the initial plantings.

Development: Product development stages

While the planning stages of the three studied companies have more similarities, on the development stages, the companies have demonstrated different approaches and starting points. On the three companies, however, the beginning of this stage is based mostly on the high management choices. In addition, on all three companies, the briefing of design activities is defined right after the planning stage. Afterwards, the directors tended not be directly involved in the process.

The starting points for the development are either the technical definitions of the products or the further development of concepts, considering definition of themes, art styles and play activities. On the company where the technical definitions worked as a first step, they did not present enough consideration for concept development or ideas exploration. The research suggests, therefore, that these processes could work on parallel.

There are also prototypes and tests stage that demonstrates a participation of designers in partnership with other members from the development department. The tests are often internal within the company members, instead of directly with the users. None of the companies has a formalized user insertion in the process. One company however, intends to formalize this step by developing playrooms for tests and recording children usage of their toys with photographs.

On the overall development process, the corporate design process does not indicates involvement of the upper management staff. Generally, the internal designers together with the development supervisor of the department deal with the design related questions. However, design members can communicate with other members of the company in three key steps:

- collection of the company needs through a briefing;
- internal testing of prototypes; and
- the product finishing steps, including its presentation.

The relation of design with other members of the development department was also strong, indicating that the design process is a collaborative and multidisciplinary process between designers and marketing professionals.

Integration of designers inside the process

Through Ulrich's PDP model, it was possible to evaluate where design was formally inserted. The results indicated a stronger participation of design in the phase 2, with designers being responsible to work on further defining a previously chosen concept. On the other hand, this step also demonstrated high outsourcing of design activities, indicating a lack of congruence between the importance of designers in the process and the need to have internal designers. This can be better visualized on Figure 5.

What we see is that, in the development process of the three companies, Designers are included mostly in the development stages, concentrated on product system development. On this stage, they work both by shaping the form of three-dimensional products and by developing the arts to be applied. Among the noted stages, the one with least influence of designers was the planning, indicating a need for stronger representation in this area.

VSPD chart analysis

Through the analysis, we developed the two charts that help evaluate the defined VSPD points. Chart 3 presents the positive considerations and Chart 4 shows the points of improvements.

Considerations

By addressing the different product development processes of the companies, the research obtained results

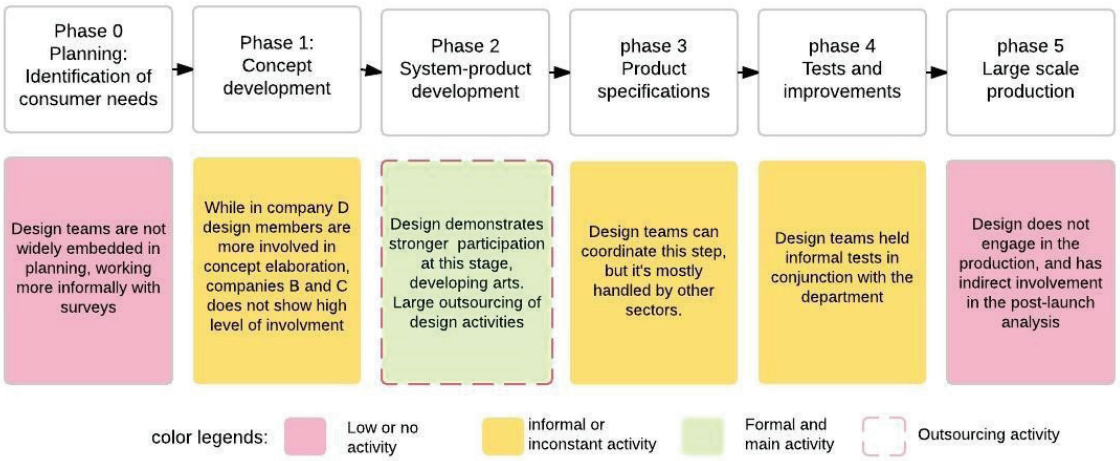

Figure 5. Design insertion in the Product development process.

Chart 3. VSPD – Positive considerations.

Vision	Planning
- Valorization of national production - Exploration for new market segments and opportunities for children - Valorizations of new toys through design - Design acting as an innovation factor - Design consolidating company images	- Flexible planning - Multidisciplinary - Market researches through marketing teams aided by designers - Good launching flow, balancing new products with relaunches - Feedback consideration through client support channels
Structure	**Development process**
- Strong productive structure - Heavy investment on new machinery - Horizontal hierarchy - Existence of development departments multidisciplinary teams on development easy communication between departments - Design inserted on development - Autonomy and influence of designers	- Process with structured stages - Development department participation - Existence of prototypes and tests - Post launching product analysis - Design has flexibility in the process - Although informal, design participation on many stages

Chart 4. VSPD – Negative considerations.

Vision	Planning
- Unstable market due to high import rate - Big focus on traditional toys - Dependency of entertainment licenses - Innovation is poorly considered as a key - Design is a new and uncertain element - Unawareness of Design Management field - Unawareness of Toy Design activities - Focus on Graphic Design activity	- Planning is still informal - Market researches are not formalized - Difficulties on integrating the user - Design Planning is based on generic administration models - Lack of activity or strong design influence - Difficulties on communicating planning decisions to design members
Structure	**Development process**
- Development department is still considered new - Inconstant design leadership - Design communication outside the development department is weak - Internal designers are not trained - Lack of knowledge on design tools	- Upper management has low involvement on the process - Communication problems between stages - Difficulties on performing external tests - Processes are long and contain delays - Difficulties on managing design processes - Design process is not based on literature

that indicated the designers' position inside the companies that highlighted key insertion points for a better activity in the sector. Among the main difficulties regarding design identified in the research, we noted that the design activity was not implemented effectively in the strategic plans of the companies. At the same time, companies still have indicated to depend on the outsourcing of design activities. For these companies, designers were considered as coordinators of different steps inside the development process. This demonstrates an important tactical role, but indicates few peculiarities for the toy design activity.

Although the researched companies do not formally consider design management as an activity, the obtained results were mostly positives when we compare with the scenario from 10 years ago, where, according to Mefano (2005) there were no formal consideration of the design activity and no insertion within the companies' structures. At the same time that design has been gaining attention, an increase of investment in the quality of the national toy was also noted during the research. This reinforces a relationship between design and quality, contributing to future definitions of functions for designers in the development processes while pointing the importance of efficiently managing design activity.

In addition, through the comparative analysis, we found that each company had different processes, varying primarily on sequential order for some activities, related with the nature of the product developed. However, many of the key steps, challenges and processes were common to them. These problems were mostly concentrated in the early stages of planning. Among them:

- informal market research;
- lack of defined parameters for defining lines and licenses, depending on upper management;
- low involvement and consideration for the needs of the user; and
- low tolerance for risks and low regard for innovation in NPD.

As many researches that intend to access the design insertion in the Brazilian industry have found (also considering Brazil's continental size), one of the biggest difficulties of the research was the availability of the researched companies. This difficulty generated restrictions on the obtaining of data regarding the project and design management processes of many companies, also imposing restrictions on the time of the visits and interviews. However, on all three companies the profile of the interviewed members remained constant being them designers and directors related with the project development process and having them submitted by the same interview protocol.

Another limitation was the absence of a universal design management model that could aid the research on assessing data regarding the companies. Although the Design Management Staircase Model is widely utilized for quantitative research, it is not ideally applicable as a qualitative data tool. By adding considerations from other models such as the FCIDA, the research found success on finding qualitative data through a possibly new formed analysis model, the VSPD, which should be further tested and evaluated.

As conclusion, we believe that the research found useful data regarding the actual scenario of designers in company. From this scenario, we should aim researches on new approaches to insert designers that can contribute to the industry challenges. Considering all these factors, for the development of the Brazilian toy industry and a better design insertion, this paper suggests also that new design management researches should be applied for a wider and more detailed portrait of this industry.

One final observation found by the research is that the infant user is widely considered as a neglected key factor for the development of new toys. Therefore, the investment on tools that can better communicate with the users' needs must also be pursued, possibly opening opportunity for stablishing toy design as its own field. By focusing more on the user, we believe that we can better insert design in the NPD processes of Brazilian toy companies, resulting on the successful release of new products, and, consequently, on the development of the toy industry.

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