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**Data-Driven Marketing**

## Exploring Toy and Game Trends in Supermarket Baskets

Cart analysis and consumer behaviour

Maria José Sim Sim dos Santos

Dissertation

presented as a partial requirement to obtain the master's degree in Data-Driven Marketing

**NOVA Information Management School**

**Instituto Superior de Estatística e Gestão de Informação**

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# EXPLORING TOY AND GAME TRENDS IN SUPERMARKET BASKETS

**CART ANALYSIS AND CONSUMER BEHAVIOUR**

by

Maria José Sim Sim dos Santos

Dissertation submitted as a partial requirement to obtain a master's degree in data-driven Marketing, with specialization in Market Research and CRM

**Supervisor:** Nuno António

November 2023

# DECLARATION OF INTEGRITY

I declare that I have carried out this academic work with integrity. I confirm that I have not resorted to plagiarism or any other form of invalid use of information or falsification of results during the process of preparing this work. I also declare that I am aware of the Rules of Conduct and the Code of Honour of the NOVA Information Management School.

*Lisbon, 30/11/2023*

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# ABSTRACT

The practice of promoting toys and games with fast food in fast-food chains has gained attention due to its significant impact on children's food preferences and associated health issues. The lack of academic research aligned with the global rise in childhood obesity, reaching 19.7% in 2021 and affecting about 14.7 million children and adolescents in the United States, revealed the importance of studying the linkage between purchasing toys and games with unhealthy food choices. Using CRISP-DM methodology with supermarket transaction data, the data revealed that 3% of shopping carts contain toys purchased along with other supermarket products, and that carts with toys have a higher average of healthier products. Examining the customer behavior dataset, customers with both babies and juniors were likely to be "Practical Parents", prioritizing day to day products over promotions. Furthermore, all families with kids do not tend to purchase as loyal but instead most occasionally and always take a medium quantity of products. Thus, for families with babies it is most common that they will return to the supermarket in a higher frequency and take a medium amount of shopping. Thus, the analysis also identifies distinct patterns in shopping carts with normal toys and collectable premium toys suggesting that people that purchase collectable premium toys, spend less money but buy products.



# KEY WORDS

Basket Analysis; Consumer behaviour; Toys and games; Shopping; Shopping cart; Public Health


## Sustainable development goals (SDGs):

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# 1. INTRODUCTION

The practice of selling toys and games with fast food in fast-food chains has gained significant attention in recent years due to its profound impact on children's food preferences, which can lead to serious health issues (Story & French, 2004). Fast-food advertisements targeting children often prominently feature toys as their central allure, emphasizing the captivating world of playthings over the food products themselves (Story & French, 2004).

The association between food purchases and toys and games is not a recent development; instead, it has long been a significant strategy in food marketing (McAlister & Cornwell, 2012). Offering toys or games with children's meals has become a widely embraced marketing tactic, notably initiated by the fast-food industry leader, McDonald's, as early as 1979 (McAlister & Cornwell, 2012). Commonly toys, which are often in the Happy Meal offering, also feature a cross-promotion with major film partnerships or licensed partners such as Disney and Mattel that include popular characters from children's favourite movies or TV programs. Thus, the fast-food industry has been targeting children aged 10-14 by offering toys and games inspired by beloved TV shows and movie characters (Bankole et al., 2023) in which these toys and games play a vital role in social life, primarily designed for children. Consequently, this industry is contributing to a thriving market valued at 107.4 billion dollars worldwide (Bankole et al., 2023).

Selling toys and games with fast-food options has become more prevalent as fast-food industries have developed persuasive techniques, such as advertisements, to market low-nutritional foods with toys to children (Folta et al., 2006). This is problematic because, studies have demonstrated that children who spend more time with media, particularly television, are more likely to be overweight and engage in sedentary activities. The importance of this study is highlighted by the global surge in childhood obesity, which escalated from 4% in 1975 to a concerning 18% in 2016 (Di Cesare et al., 2019). In 2021, the prevalence of obesity reached 19.7%, impacting around 14.7 million children and adolescents in the United States. Specifically, obesity rates were 12.7% among 2- to 5-year-olds, 20.7% among 6- to 11-year-olds, and 22.2% among 12- to 19-year-olds (Centers for Disease Control and Prevention, 2023). Moreover, children have been opting for calorie-dense yet nutritionally deficient foods (such as fast foods), engaging in prolonged screen time on television or computers, and, therefore, insufficiently engaging in physical activities (Centers for Disease Control and Prevention, 2023). Another great concern is that young children may not comprehend that television advertising can be manipulative. Furthermore, the extensive promotion of high-fat and high-sugar foods to children can be seen as exploitative, as young children often lack the understanding that advertisements are designed to promote products, and they have not yet developed the cognitive capacity to comprehend or evaluate advertising messages (Story & French, 2004). Furthermore, out of 183 unique ads in the

United States, 35% were related to food associated with toys and games targeted at school-age children, and none of these ads featured fruits or vegetables (Folta et al., 2006).

A disparity exists between academic research and real-world implications, underscoring the significance of this topic due to its profound influence on children's food preferences and unhealthy dietary choices. Thus, given that supermarkets are pivotal in household food procurement, exerting a substantial influence on people's food choices (Driessen et al., 2022), it's worth noting that unhealthy foods tend to receive more price promotions, marketing efforts, and prominent in-store placements compared to their healthier counterparts. Furthermore, the scientific goal of this study is to investigate how marketing tools, particularly toys and games, influence children's dietary preferences (Di Cesare et al., 2019).

Various retail settings provide opportunities for businesses to sell food products with toys and games. For instance, fast-food chains like McDonald's and Burger King frequently create packages, as mentioned earlier in this study (Folta et al., 2006). Additionally, theme parks leverage their unique environments to further promote the purchase of toys through food offerings, often shaping food products to resemble the toys they sell (Sylt, 2014). Thus, supermarkets have joined in by establishing cross-promotions between food and toys, such as allowing brands to offer premium toys with some food products such as cereals, enticing kids to collect the entire set. While supermarkets permit certain product brands, such as cereal brands, to include toys or games within their packaging, it's concerning that three out of four brands do not align with the healthy guidelines for children. What's even more troubling is that the current findings suggest a worsening situation since 2006, a period during which the food and media industries vowed to adopt more responsible approaches to marketing to children (Harris et al., 2010). Moreover, there has been an increase in the number and diversity of cross-promotions targeting youth, accompanied by a decline in the nutritional quality of products associated with these promotions. These tactics lead to impulsive buying, a common occurrence in retail environments, with studies indicating that over 80% of purchases are unplanned (Driessen et al., 2022).

Despite the closure of numerous toy stores, this industry remains robust, thanks to the continued success of toy sales in large retail chains (Failory, 2022). For many years Toys R Us had great success selling children’s toys, and the technology behind them boomed through the 60s, 70s, 80s, and 90s (Failory, 2022). However, the late 90s were when Toys R Us started experiencing its first big problems, including major competition from other retailers, such as Walmart and Kmart (Commisso, 2021). Contrary to the popular belief that online retailers like Amazon were solely responsible for the closure of Toys R Us, it was the fierce competition from affordable "big box" stores like Walmart, Kmart, Target, Costco, and other supermarkets (Commisso, 2021). These stores all share the commonality of also selling other basic and necessary products for their customers’ daily lives, such as food, cleaning materials, hygiene products, snacks, and drinks

providing their customers with more convenience (Delesline III, 2022). Big-box stores like Walmart, Kmart, Target, and Costco were already well established in the 90s decade and began offering lower prices on consumer goods as well as toys and games (Delesline III, 2022). Diving deeper, a survey looked at where shoppers plan to do their toy and game shopping and big-box retailers (e.g., Target, Walmart, Big Lots, and Costco) account for 22% of shoppers, their websites account for 13% of purchases, leaving online retailers with 34% of orders and only local toy stores with 16% (Failory, 2022). This means that Big-box stores are still on the lead along with online channels when it comes to selling toys and games. Even though many parents appreciate the convenience of not having to leave their homes to get their children toys, and online toy purchasing has introduced immediate product reviews and the ability for a faster price comparison, it does not alter the fact that most parents still prefer to purchase in-store as they rely on their children's input and influence to make the final decision (Richards et al., 2020).

Supermarkets bring families together for shopping, and it is where children make the most requests to their parents or guardians. It is also important to note that children often express their desires and successfully secure purchases while accompanying their parents at the supermarket. An impressive 96% of parents attest to their children making requests during grocery shopping, surpassing the rates observed at clothing stores (85%), electronics stores (82%), convenience stores (82%), and shoe stores (79%) (O'Dougherty et al., 2006). Furthermore, a substantial 21% of parents admit to consistently purchasing other items their children ask for during grocery shopping-a significantly higher percentage compared to other retail settings, where only 12% or fewer parents routinely fulfil their children's requests (O'Dougherty et al., 2006).

It is worth noting that marketing strategies targeting children often emphasize fun, fantasy, innovation, and pleasure. In the U.S., food and beverage companies spend nearly $2 billion annually on marketing to children, with a substantial portion allocated to promoting less healthy options (Smith et al., 2019). In 2009, fast-food chains dedicated 59% of their marketing budgets to including toys with children's meals, despite concerns about the nutritional quality of these meals and their influence on children's choices (Richards et al., 2020). Consequently, supermarkets may have an opportunity to bridge a gap in the market and promote healthier options by incorporating toys and games into their offerings (Richards et al., 2020). Although supermarkets have become popular hubs for toys and games due to their convenience and extensive product selections (Richards et al., 2020), the full potential of analysing toys and games alongside other items in shoppers' baskets remains largely untapped (Lambert & Goh, 2020). This presents an opportunity for supermarkets to strategically help parents and children make better choices (Terblanche, 2018).

Taking the above into consideration, while toys and games have played a pivotal role in indulging children's desires in fast-food chains, this leaves room for supermarkets to link toys and games with healthier food choices. This topic is highly relevant because supermarkets serve as gateways to the food retail landscape, wielding considerable influence over consumer choices. Additionally, supermarkets have become go-to destinations for purchasing toys and games due to the convenience they offer to parents and guardians (Page et al., 2018). In this way, supermarkets may continue to profit by renewing their marketing strategies for healthy food linked with toys and games, especially to help improve public health among children (Page et al., 2018).

While previous research has primarily concentrated on examining various products within supermarket carts, investigating the challenges faced by toy stores and analysing the marketing strategies employed by fast-food chains to entice children with food-toy associations, this study introduces a distinctive perspective. It aims to make a valuable contribution to promoting healthier dietary choices in children by establishing a connection between these healthier options and the presence of their favourite toys and games. As a result, the first inquiry guiding this study is as follows: Is the presence of toys and games in supermarket shopping carts related to how customers purchase fast food or other nutritionally unfavourable options, like patterns observed in fast-food chains?

By answering this question, it will be possible to gain insights into where families primarily direct their attention when purchasing toys and games, shedding light on the critical link between children's dietary choices and the presence of toys and games in their shopping carts.

Furthermore, children are believed to be even more susceptible to marketing tactics such as product packaging and branding than adults due to their heightened response to visual cues. Consequently, as Lambert et al. (Lambert & Goh, 2020) suggest, premium and collectable toys serve as effective marketing tools for retailers, as they bolster the total customer basket value. Furthermore, when a child acquires the initial toy from a collectable set, their strong desire to complete the entire set often leads to persistent requests to obtain the remaining items (McAlister & Cornwell, 2012). In essence, what might have initially been a single-meal purchase driven by a young child's fascination with a toy can transform into multiple purchases, depending on the number of toys required to complete the collectable set. Notably, parents often find it challenging to compete with the persuasive impact of marketing tactics when attempting to promote healthy eating habits at home (Nepper & Chai, 2016). This is because collectable toys are commonly associated with less healthful meals, while more nutritious meal options are typically available without any premium incentive (Nepper & Chai, 2016). Thus, collectable toy premium promotions have proven to drive sales, as demonstrated by Coles' 2018 premium toys promotion, which achieved a 5.1% growth in same-store sales (Lambert & Goh, 2020). However,

it is important to consider whether the presence of premium toys helps parents make better choices when it comes to food. This leads to the second question posed by this study: Do shopping carts containing premium toys tend to have a higher proportion of non-healthy food items compared to carts with non-premium toys?

Furthermore, through conducting a comprehensive analysis of diverse studies, it will be possible to observe how are toys being bought, identifying the different type of customers and understand what other products are purchased with toys and games. Additionally, the formulated questions aimed to investigate the popularity and demand for specific toys and games within the supermarket setting, offering valuable information on consumer preferences and dietary choices.

# 2. LITERATURE REVIEW

This section aims to investigate the multifaceted relationship between toys, children's dietary preferences, and the retail industry, particularly within supermarket settings. By exploring the role of toys in shaping children's food choices, analysing consumer behaviour, and examining the influence of marketing strategies, this review seeks to provide fresh insights into the intersection of toys, retail trends, and dietary decision-making. The review also focuses on the substantial influence exerted by children over household purchasing decisions. Furthermore, by addressing existing gaps in scholarly research, this literature review offers insights into the marketing of toys and games, emphasizing the crucial role children play in shaping both retail trends and dietary choices (Hobbs, 2014).

According to a study conducted by Smith et al.(2019), children residing in the United States frequently adhere to the "Western Diet," characterized by high caloric intake, a surplus of sugars, trans and saturated fats, elevated salt content, and the presence of food additives. Conversely, this diet is notably deficient in complex carbohydrates and essential vitamins. Existing research has established a correlation between increased screen time and the consumption of energy-dense snacks, sugary beverages, fast food, and reduced consumption of fruits and vegetables. Thus, marketing communications, including advertising, promotional efforts, and branding have the power to shape consumers' expectations regarding the benefits of food products (Chandon & Wansink, 2012). It's important to note that some food products, such as milk, meat, fruits, and vegetables, are often treated as commodities (Chandon & Wansink, 2012). Therefore, the prices of commodities are mainly determined by global supply and demand dynamics in the short term, with long-term price variations stemming from increased production efficiency across the food supply chain, rather than marketing influences. In contrast, branded food products undergo differentiation in the eyes of consumers due to advertising, formulation, packaging, distribution, and other factors (Smith et al., 2019). However, over the past half-century, a prominent change has been observed: a significant decline in the cost of food, especially for branded, processed items high in sugar and fat, as well as for ready-to-eat foods prepared outside the home (Chandon & Wansink, 2012). Most food products are non-commodities, meaning they are branded and distinguishable in the consumer's perception due to various marketing tactics and attributes (Chandon & Wansink, 2012).

## 2.1 Influence of Children on Shopping Behaviour

Health organizations argue that toys can serve as a tool to enhance the nutritional quality of children's diets. While parents generally support the use of toys to promote healthy menu options, they express discomfort with this practice in the context of fast-food marketing (Story & French, 2004). Furthermore, persuasive marketing is pervasive in children's environments,

encompassing television, websites, games, supermarkets, and areas around schools. This extensive and sophisticated marketing presence contributes to the challenge of combating childhood obesity, necessitating comprehensive strategies to address this issue. According to Story and French's study (Story & French, 2004), children and adolescents are increasingly consuming meals outside of their homes, increasing their soft drink consumption, and indulging in snacks more frequently (Story & French, 2004). American youngsters currently derive more than half of their daily caloric intake from either fat (32%) or added sugar (20%). Presently, 19% of youth in the United States are overweight, a rate nearly double that of children and three times higher for adolescents compared to prevalence rates from 1980 (Story & French, 2004). Additionally, nearly 60% of overweight children exhibit at least one cardiovascular risk factor, such as hypertension or hyperlipidaemia, and there is a rising incidence of type 2 diabetes mellitus among young individuals (Lambert & Goh, 2020). These trends could potentially have a substantial negative impact on the future health and productivity of the U.S. population and contribute to escalating healthcare expenses. This means that the increasing epidemic of childhood overweight and obesity presents a significant public health challenge.

It is essential to acknowledge that, on average, around 17% of grocery store shoppers are accompanied by children during their shopping outings. This phenomenon significantly influences household purchase decisions, as children physically accompany adults in nearly 20% of supermarket visits. Notably, parents shopping with children tend to increase their spending by an average of 25% (Page et al., 2018). This evolving consumer behaviour has implications for traditional toy stores, which have witnessed a decline in recent years. An article titled "Amazon Didn't Kill Toys 'R' Us. Here's What Did" (Isidore, 2018), highlights the primary reasons behind this decline. Traditional toy shops have faced challenges due to their exclusive focus on selling toys, primarily attracting children. In response to this changing landscape, big-box retailers have ventured into selling toys and games. This shift offers convenience to parents, who can purchase these items during routine grocery shopping and caters to children's preferences expressed during shopping trips. This trend diminishes the need for guardians to visit dedicated toy stores, contributing to the decline of traditional toy shops. Furthermore, a study conducted by Singh (2019), suggested that toy stores were characterized by their excessive size, overcrowded inventory, ineffective merchandising, and lack of customer service. This unfavourable shopping experience fails to attract busy consumers who prefer the convenience of purchasing toys alongside their groceries, school supplies, and other essential items from retailers like Target. Furthermore, the increasing demand for games and toys for at-home entertainment has contributed to the active purchase of these products through hypermarkets and supermarkets (Singh, 2019).

## 2.2 Determinants of Toy Purchases and Their Influence on Food Choices

Understanding the psychological factors that drive parents' decisions to purchase toys is an intriguing facet of this study's exploration. According to Cagle's study (2021), parents consider various factors such as the toy's gender suitability, safety, educational value, and price. Toys not only provide entertainment but also serve as tools for learning and knowledge acquisition. They often come with accompanying materials such as printed materials, catalogues, CDs, and brochures that contribute to children's self-awareness, language development, communication skills, knowledge acquisition, cognitive abilities, and social skills (Al Kurdi, 2017). Parents often prioritize those specific aspects of toys, although, it's noteworthy that other factors, particularly the impact of toy advertisements, hold significant sway in the decision-making process. These advertisements usually employ captivating visuals and persuasive messaging, both in traditional media and on toy packaging, exerting a substantial influence on children's preferences and choices (Al Kurdi, 2017).

For instance, McDonald's often partners with well-known film franchises such as Disney and Mattel, featuring beloved characters from children's movies and TV programs. Numerous studies have consistently demonstrated the power of pairing these premium toys with meals in enhancing children's preferences and anticipation of the food (Otten, 2014). In the study conducted by Langacre et al. (2016), surveys underwent cognitive pre-testing involving a demographically comparable sample. Their analysis included four prominent fast-food restaurant chains—McDonald's, Burger King, Subway, and Wendy's—selected based on specific inclusion criteria. These criteria considered their rankings among the top 10 quick-service restaurants, as reported in annual sales data from QSR Magazine (Longacre et al., 2016). Notably, these restaurants were chosen for their practice of offering collectable premium toy incentives (CPTI) as part of their kids' meal offerings.

Langacre et al. (2016) monitored the release of CPTI associated with kids' meals at the four fast food restaurant chains. This monitoring process involved weekly checks on the respective fast food company websites throughout the data collection period. In cases where the website did not provide adequate information or descriptions of specific toys, their research team employed a direct approach by having a research assistant contact one or more restaurants located within the catchment areas to gather detailed information about the current CPTI. The study meticulously categorized these CPTIs into specific types, including movies, TV shows, toys/games (encompassing video games and apps), and others. They reported that approximately 30% of these CPTIs were intricately linked to popular movies, another 30% were associated with captivating toy and game themes, and approximately 24.5% were inspired by popular TV shows (Longacre et al., 2016).

The distribution of these CPTIs among prominent fast-food restaurant chains demonstrated intriguing variations. Specifically, Langacre et al. (2016) revealed that McDonald's and Burger King showcased a fairly even distribution of CPTIs across the movie, TV show, and toy/game categories. Subway, on the other hand, demonstrated a distinct preference for movie related CPTIs, with this category occupying the largest proportion. Conversely, Wendy's strategically favoured CPTIs centered around toys and games, making this category the most prevalent among their offerings. These promotional tactics effectively shape children's perceptions, desires, and preferences, ultimately influencing their choices when it comes to food (Longacre et al., 2016).

Moreover, various studies emphasize the influence of children's age on their role in shaping their parents' purchasing decisions. While older children exert less direct influence, they tend to be more persuasive when they attempt to influence buying choices (Martensen & Grønholdt, 2008). Children consistently seek the latest and newest toys, providing an opportunity for supermarkets to enhance their offerings in this regard (Martensen & Grønholdt, 2008). However, it's worth noting that supermarkets have yet to fully capitalize on this approach of linking food with toys and games, as identified by Lambert and Goh (2020) highlighting a market gap, especially in linking toys and games with healthy food (Gram, 2015).

In a 2012 study by McAlister and Cornwell investigating the influence of toys on food preferences, participants were exposed to a variety of menus, including fast-food menus with and without toys, as well as healthier food options. The results of this study indicated that toys played a significant role in shaping the food preferences of preschool-aged children. Furthermore, this study suggested that by incorporating toys into menus featuring healthier food choices could spark children's interest in those options (McAlister & Cornwell, 2012). Initially, children exhibited a preference for fast food, but the introduction of a toy notably increased their interest in healthier meal selections. These findings emphasize the substantial influence of toys, particularly those featuring popular characters, on children's food preferences, potentially guiding them towards healthier choices. These techniques emphasize taste, flavour, healthiness, nutritional value, and incentives for purchasing the product (McAlister & Cornwell, 2012).

Furthermore, another study conducted by Bezawada et al., (2009) highlights the impact of placing related departments or product categories near each other within retail spaces, which has a substantial effect on a retailer's profitability. Empirical studies (Inman et al., 2009), stochastic models (Farley & Ring, 1966) and agent-based modelling applications (Batty, 2005) support this observation. Placing specific categories in physical proximity can either boost or reduce sales. The visual effect of closeness can also stimulate impulse purchases, which typically account for around 70% of buying decisions in supermarkets (Cil, 2012). As a testament to the importance of adaptability and understanding consumer behaviour, Seven-Eleven Japan has a policy of adjusting its store layout and product placement multiple times every day to reflect the changing purchase

patterns at different hours. This approach ensures that customers can easily locate their favourite items. Successful retailers depend on their ability to remain flexible and adapt to these changing dynamics, allowing them to continually optimize product placement for more effective layouts (Cil, 2012).

Moreover, it's important to recognize that consumer behaviour, especially concerning toys and games, displays seasonal trends. Most consumers tend to purchase toys and games as gifts during the holiday seasons (Terblanche, 2018). These products are often associated with gift-giving, leading to increased purchasing frequency during holidays and special occasions, such as birthdays, graduations, Christmas (December 25), and New Year (January 1). In North America and Europe, the fourth quarter of each year, encompassing Christmas and New Year, consistently represents the peak period for retail toy and game revenues. On the other hand, holidays like Easter (April), Valentine's Day (February 14), and Halloween (October 31) typically yield comparatively lower toy and game revenues (Drost et al., 2010). Understanding these seasonal variations can empower retailers to remain competitive in a dynamic market by adapting to changing consumer behaviours (Cil, 2012).

## 2.3 Leveraging Association Rule Theory: Toy and Game Sales linked with healthy options at supermarkets

Association rule theory, also known as association rules mining, plays a pivotal role in understanding consumer behaviour and enhancing sales strategies. This data mining technique uncovers patterns and relationships between items frequently purchased together, offering valuable insights for multiple industries, including the retail sector (Han et al., 2012). When applied to the domain of supermarkets, association rules become a potent tool for optimizing the marketing and sales of toys and games. Toys and games have distinct characteristics that make them prime candidates for basket analysis within supermarket contexts. Notably, these products often yield higher profit margins compared to essentials such as groceries or household items. Furthermore, they offer significant potential for cross-selling with related items. For instance, customers who purchase board games may also demonstrate a propensity for acquiring snacks. By identifying these purchase patterns, supermarkets can refine their product placement strategies, offering enticing package deals or positioning related items closer together. This, in turn, stimulates impulse purchases, particularly during specific times of the year (Han et al., 2012).

Despite the insights derived from existing research, several noteworthy gaps persist within this field, particularly concerning innovative approaches to selling toys and games in conjunction with healthy food at supermarkets. Through the application of basket analysis, this study endeavours to offer novel recommendations for future studies and contribute to a deeper comprehension of this subject. While the primary focus here centres on the pre-school year

period (September), prospective research can address these gaps by examining datasets tailored to Christmas, Easter, and other holiday seasons. By analysing purchasing patterns for toys and games alongside other supermarket products during these holidays, researchers can uncover trends, sales fluctuations, and shifts in dietary preferences. This newfound knowledge empowers supermarkets to adapt their product offerings and optimize their product placement strategies year-round as well as adapt advertisements and campaign strategies.

In conclusion, association rule theory offers a powerful framework for improving supermarket sales strategies, particularly for toys and games. The upcoming sections of this study will delve into the specific methodologies used in this research and explore the impact of these strategies on consumer behaviour and sales.

# 3. METHODOLOGY

This section outlines the research methodology employed for investigating the supermarket basket analysis of toys and games. The approach combines quantitative data analysis techniques and secondary research to delve into consumer behaviour and purchasing patterns of two different datasets. Basket analysis, a statistical technique widely used by retailers to gain insights into customer purchasing behaviour, serves as the focal point of this study. The decision to use Jupiter Notebook was made because it offers several advantages, including resource efficiency through library-based computations, enhanced flexibility, heightened accuracy, and cost-effectiveness. In this context, Python is the chosen language for the analysis of both datasets. The initial step involved uploading the datasets in a readable CSV format to Jupiter Notebook, where essential libraries were integrated to facilitate a comprehensive examination of products and also the client's type of purchases, including "seaborn as sns," "matplotlib.pyplot as plt," "pearsonr," and "numpy as np."

With this, the concept model that was employed in the data analysis for this study follows the CRISP-DM (Cross-Industry Standard Process for Data Mining) methodology, which provides a structured approach for conducting data analysis projects as it is presented in the Figure 1. The CRISP-DM model consists of several key steps: business understanding, data acquisition, data understanding, data preparation, modelling, evaluation, and deployment (Chapman et al., 2000). To effectively conduct the CRISP-DM model, the research started with the business understanding phase, where the goals and objectives of the study were defined. Furthermore, in this conceptual model, the data understanding phase involved exploring and gaining insights into the dataset to be analysed from the acquired data. This process also included data cleaning and pre-processing to ensure that the datasets were accurate and complete. Moreover, a data preparation phase followed, involving categorization after the data was cleaned to make it ready for analysis (Chapman et al., 2000). Subsequently, data preparation was conducted to ensure accuracy and completeness, followed by data modelling using techniques such as association rule mining and clustering (Chapman et al., 2000).

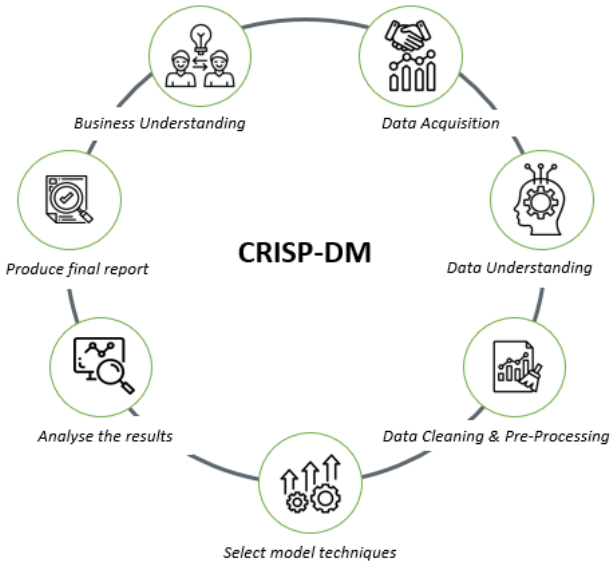


Figure 1 - Proposed Framework

For the analysis of toys and games sold at supermarkets, conducting basket analysis through association rule mining can yield valuable insights into commonly co-purchased products and customer decision-making processes. However, one of the main challenges in basket analysis for toys and games lies in the extensive variety of products available at supermarkets. With such a wide range of supermarket products and different brands, identifying meaningful patterns and correlations can be challenging. To address this challenge, additional techniques such as correlation analysis and association rule mining techniques were utilized. The idea behind association rule mining is to examine the transaction data and identify frequent item sets, which are sets of products that appear together in the same purchase. Once frequent items have been spotted, it can describe the relationships between those item sets (Fayyad et al., 1996). Moreover, the association rule mining helped to understand which products are most popular, and which products may be good candidates for promotions as well as cross-selling.

To ensure the quality of the dataset, a series of cleaning procedures were applied. The original dataset contained 560,001 entries, encompassing all products and coupons. However, as coupons lacked crucial data related to quantity, unit price, and description, they were considered irrelevant for this analysis and subsequently removed. Additionally, several rows in the dataset were found either empty or contained missing information. To maintain data integrity and prevent any adverse impact on the analysis, these rows were also eliminated as part of the data cleaning process. The original dataset consisted of 15 columns, but only those deemed relevant for this study were retained. Consequently, the final dataset used for analysis contained 519,606 entries and was reduced to 9 columns as described on Table 1.

Table 1- Cart_Item Dataset Description

| **Title** | **Description** |
|---|---|
| Cart_id | Number allocated to each cart. |
| Discr_pc | Here there were two types of entries: product and coupons that allows to understand if it's a product in the cart or a coupon being used. |
| Brand_name | The 'brand_name' corresponds to the brand of each product. |
| Unit_measure | In the 'unit_measure', this is represented by Kilograms, Liters or simply with the name Unit that corresponds to one normal package of any product in the supermarket. |
| Unit_price | The 'unit_price' corresponds to the price in euros for one Unit, Kilograms or Litters. |
| Price_unit_discount | 'Price_unit_discount' corresponds to the new price of the correspondent product with the discount already applied. |
| Quantity_cart | The 'Quantity_cart' corresponds to the quantity of the respective product on each cart. This measure appears in numbers. |
| Name_item | The 'Name_item' is the complete name of the product itself. |

After completing the dataset cleaning process, the next step involved categorizing all the products. This categorization was a crucial preparatory step for conducting basket analysis, aiming to unveil potential correlations between product categories within the dataset and address the initial research questions. With a dataset of 519,606 entries, a categorization system featuring 16 sub-categories was established, as shown in Table 2. This system was designed to classify each product entry into one of these sub-categories. Categorization involved grouping data based on

shared characteristics. This classification primarily served to create meaningful data categories for streamlined correlation analysis with other sub-categories. Thus, the choice of these categories was based on the specific research questions of this study, aligned with the type of products that correspond to each segment of customers' needs and their characteristics (Gaffar, 2021). However, it's important to note that there are limitations, as supermarkets stock a wide variety of distinct brands, resulting in varying product diversity within categories that fall under the same section (Gaffar, 2021).

Table 2 - Cart_Item Categorization Description

| **Name of the category** | **Description** |
|---|---|
| Food product | This category refers to any item that is intended for human consumption and provides nutritional value. It can include fresh, packaged, or processed foods, such as fish, meat, sauces, and more. |
| Animal care | This category includes products that are used to take care of pets or livestock, such as food, supplements, grooming tools, and more. |
| Toys and Games | This category includes products that are designed for play or amusement, mostly for children, such as dolls, action Figures, puzzles, board games, colour pens, Disney branded trolleys and other Disney branded toys and games. |
| Food product alcohol | This category includes products that contain alcohol, such as beer, wine, spirits, and other alcoholic beverages. |
| Food product baby/child | This category includes products that are specifically designed for infants and young children, such as baby food. |
| Food product cookies/sweets/snacks | This category includes products that are sweet or savory and are typically |

| | |
|---|---|
| | consumed as a snack, such as cookies, sweets, chips, and other similar items. |
| Food product cereals and derives | This category includes products that are made from grains, such as cereal, oatmeal, and bread. |
| Food product frozen | This category includes products that are intended to be stored in a freezer and are typically cooked or reheated before consumption, such as frozen dinners. |
| Food product fruits and vegetables | This category includes fresh or packaged produce, such as apples, bananas, carrots, and more. |
| Food product dairy | This category includes products that are made from milk, such as cheese, yogurt, and butter. |
| Food product Ready to eat | This category includes products that are already cooked or prepared and can be eaten immediately, such as pizzas. |
| Food product soft drinks | This category includes non-alcoholic, carbonated beverages, such as soda, sparkling drinks such as Coca-Cola, Fanta and others. |
| Hygiene and cleaning product | This category includes products that are used for personal hygiene, cleaning, or sanitizing, such as soap, shampoo, laundry detergent, and disinfectant wipes. |

Since the first dataset did not allow to understand about the customer's types of purchases and correlate them with their usual shopping behaviour, the examination of the second dataset became important for this study, since it contemplates clusters of different types of customers and their types of purchases. The second dataset, composed of 77944 entries, requiring no cleaning, enabled to proceed with the analysis without the initial data cleaning step in CRISP-DM. Furthermore, this dataset includes information about the types of customers based on their card

number purchases, purchase frequency, household details, and a segment crucial for this study: parents with children aged 0-3 years and parents with children aged 3-12 years. According to Ebster et al., (2009), this is typically the segment of parents that purchases most toys and games for children. Therefore, this dataset provides insights into how parents or families with children purchase supermarket products, aiding identification of effective promotional strategies for supermarket products paired with toys and games for this segment.

Table 3 - Customer_Behaviour Dataset Description

| **Name of the column** | **Sub-categories** | **Description** |
|---|---|---|
| CUSTOMER_ACCOUNT_NR_MASK | Customer card number | This number corresponds to each customer with the supermarket card. |
| SEGM_DSC_VALUE | “Frequent medium”; “Frequent small”; “Loyal large”; Loyal medium”; “Loyal Small”;” Occasional Medium”; “Occasional Small”; “No Value; | These categories represent clusters on how frequently and how much clients purchase at a time they go to the supermarket. |
| SEGM_DSC_LIFESTYLE | “Os Pais Práticos”; “Os Urbanos Sofisticados”; “Os saudáveis Exigentes”;“Os urbanos sofisticados”; “Os generalistas disciplinados”; “Os tradicionais frequentes” ; “Os económicos frequentes”; “Os económicos focados”; “Os promocionais atentos”; “Sem valor” | These categories represent the type of customers’ personality in clusters according to what they purchase at the supermarket. |
| SEG_STAGE | “Senior”; “Family with young adults”; “Active adults”; “Family with kids”; “Family supporters”; “No value” | These are the categories that represent the households on the customers that shop at the supermarket. |
| SEGM_BABY_CD | “0”; “1” | “0” means that there is no baby from 0 to 3 years old, “1” means that there is a baby from 0 to 3 years old. |

| | | |
|---|---|---|
| SEGM_JUNIOR_CD | “0”;”1” | “0” means that there is no baby from 0 to 3 years old, “1” means that there is a baby from 0 to 3 years old. |

Moreover, cluster analysis was employed to group customers with similar purchasing behaviour and demographic characteristics. The primary goal of cluster analysis was to identify commonalities among customers, particularly parents. By grouping data points with similar attributes, this technique revealed patterns within customer behaviour and demographics. For instance, it facilitated the identification of clusters of customers who exhibit similar traits, such as consistent purchase amounts during a single transaction, a preference for particular types of purchases, and potentially having children within a specific age range. These insights can be invaluable for supermarkets as they work to refine their marketing strategies. Identifying common characteristics within these segments can inform targeted marketing campaigns and product placement strategies. This, in turn, enables supermarkets to tailor their approaches effectively, appealing to specific customer groups and potentially linking toy and game sales with healthier food options.

# 4. RESULTS AND DISCUSSION

## 4.1 Basket Analysis with Toys and Games

The analysis began by examining shopping carts containing at least one toy or game, a crucial step in understanding purchasing patterns related to toys and games at supermarkets. Initially, the focus was on determining the number of shopping carts in this dataset that contained at least one toy or game, which amounted to 874 out of 29,340 carts. This represents approximately 3% of the total dataset. The relatively low percentage can be attributed to the dataset's timeframe, specifically September , a month not typically associated with peak toy and game purchases compared to holiday seasons like Christmas, which witness a surge in these products (Cil, 2012). It's also worth noting that customers usually visit supermarkets primarily to buy food, especially during off-peak seasons. Despite the relatively low number of shopping carts with toys, it was possible to proceed with the analysis of 874 carts that contained at least one toy or game. Among these, 699 shopping carts included the purchase of a toy or game alongside other supermarket products. his supports the earlier observation that customers often find it more practical and convenient to buy toys while already shopping for other products (Smith et al., 2019). Further analysis of these 699 shopping carts revealed a total of 6,714 'food products' and 3,296 'other products.' This highlights the need for supermarkets to explore connections between promotions of food products and toys and games, emphasizing the importance of understanding the types of products frequently purchased in conjunction with toys.

The analysis delved into the types of products commonly found in these 699 shopping carts containing at least one toy or game. On average, each cart with toys and games contained 8 'food products', ' 2 dairy-related items, 1 or 2 hygiene products, and typically 1 package of fruits or vegetables and others. The analysis indicated that for parents purchasing at least one toy or game for their children, the average number of products in their carts was 19, in which the average is to have a higher volume of healthy selections than snacks and fizzy drinks. In comparison, shopping carts without toys averaged around 35 products, comprising 25 food-related items, 2 dairy-related products, 2 fruits and vegetables, and 1 or 2 cleaning/hygiene products, along with other miscellaneous items. Overall, all carts containing toys account for 7% of healthy selections of products, while snacks and drinks only account for 5% of the full cart. On the other hand, in carts without toys, the total percentage of healthy selections was only 6% and snacks and drinks account for 2% in the full cart. The analysis revealed that carts containing toys tend to have an average higher number of unhealthy options (0.86) in comparison with the carts without toys (0.76). Furthermore, carts without toys are more common and the products in the carts that contain toys and games present an average of unhealthier options larger than carts without toys, which are 97% of the full dataset. This means that people who buy toys and games tend to have a higher preference for snacks and unhealthier food options. Despite this, in both types of carts,

the number of healthy options consistently exceeded that of snacks. The analysis indicates an overall preference for healthier options in both types of carts, with the presence of toys encouraging a slightly higher inclination towards snacks compared to carts without toys.

In addition to analysing cart composition, the aim was to identify the most purchased products, aside from toys, in shopping carts containing toys and games. The objective was to explore the potential for supermarkets to align healthy options with toy and game purchases. As displayed in the Figure 2, it is evident that carts that purchase toys consistently acquire a set of common products. These items predominantly include school-related goods, alongside essential food items such as bananas, milk, cheese, water, butter, carrots, zucchini, yoghurts, and mini cheese. This finding suggests that toys and games are frequently accompanied by the purchase of healthy foods. An intriguing observation is the limited variation in product choice within this category. In a typical supermarket, customers encounter an array of brands and options for similar items. For instance, when selecting paper products, customers often have a choice among numerous brands and varieties. However, in the context of this study, these customers consistently opted for the same products. This could suggest that families prefer certain brands.

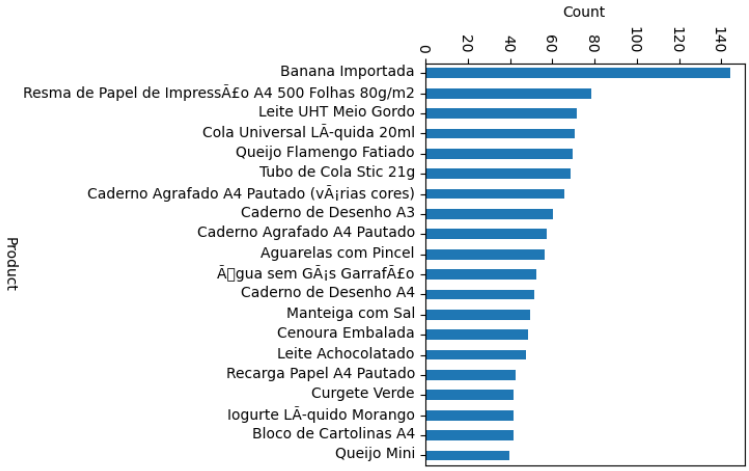


Figure 2 - Most Common Products in Carts with Toys and Games

Moreover, in the Figure 3 it is possible to find all the products that are always purchased when toys and games are purchased too.


Figure 3 - Word Cloud of Purchased Products with Toys

However, relying solely on averages might not provide a comprehensive understanding, particularly since carts with toys constitute only 3% of the total dataset. Therefore, the following analysis considers the differences between carts with and without toys, in addition to other supermarket products. As observed in the Figure 4, customers who purchased toys also buy a greater quantity of supermarket products overall.

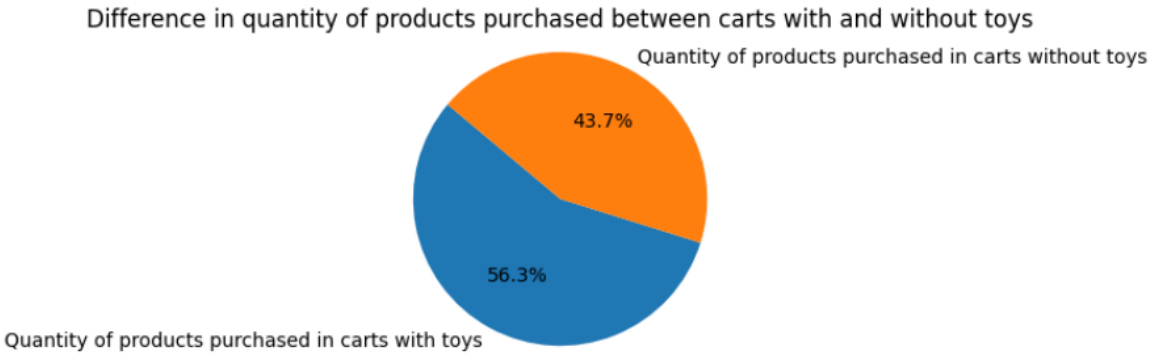


Figure 4 - Difference in quantity of products purchased between carts with and without toys

This shopping cart analysis, delves into the inclusion of carts with and without toys alongside both basic and non-basic products, providing critical insights into consumer needs over preferences. For this case, the basic products are considered the products that are not superfluous and are indeed needs such as: 'Food product'; 'Animal care'; 'Food product baby/child'; 'Food product cereals and derives'; 'Food product fruits and vegetables'; and 'Food product dairy'. As illustrated in the Figure 5, it becomes evident that while customers do buy toys and games, which are classified as non-basic products, their shopping carts consistently contain a more substantial quantity of basic products in conjunction with these toys and games.


Figure 5 - Distribution of Carts with and Without Toys

To address the study's question, it was crucial to understand the preferred toys and games. The top 20 toys most frequently purchased by these customers were classified, aiming to determine if any could be classified as a premium collectible item. The most popular toy was 'Veiculos (vários modelos),' followed by plasticine, Ninja Kai Game, puzzles, miniature cars, Legos, Disney-branded pencil cases, and other branded toys and games inspired by kids' favourite TV shows and movies. 'Veiculos (vários modelos)' refers to miniature toy cars, typically favoured by boys, and indeed, these are considered premium collectable toys. They come in a variety of colours and models, closely resembling real-life vehicles but in miniature form. Their appeal to young children often leads them to request these toys from their parents in order to have the full set which comprehends 36 different cars of different colours, shapes, and sizes, but they are all from the same "Hot Wheels" collection. Additionally, these miniature cars are attractively priced at just 2.19€, making them a cost-effective choice for customers. These toys also serve as convenient distractions for children while their parents or caretakers continue their shopping.

In addressing the second research question posed by this study, an examination of cart contents involving collectable toys versus regular toys was conducted. It was found that, on average, shopping carts with collectable toys boasted a slightly higher number of items, averaging

20 products, compared to shopping carts containing regular toys, which averaged 19 products. Furthermore, it is noteworthy that shopping carts with collectable premium toys presented a marginally elevated average of 0.94 snacks and unhealthy options while shopping carts with regular toys averaged 0.82 in this category. Conversely, shopping carts featuring collectable premium toys also exhibited a heightened average of 1.9 fruits and vegetables, whereas carts with regular toys contained an average of 1.3 of these items.

Significantly, the financial aspect of this analysis highlighted an interesting facet. The average cost of shopping carts carrying premium collectable toys was 73.43€, in contrast to the average cost of 91€ for carts with non-premium toys, signifying a substantial difference of 17.57€ between these two carts. Notably, this discrepancy demonstrates varying consumer spending patterns based on their choice of toys. Collectively, these findings indicate that customers who opt for collectable toys tend to fill their shopping carts with a greater number of items, however, they present to be cheaper. Conversely, customers selecting non-premium toys tend to exhibit higher overall spending, despite having fewer items. This analysis directly addresses the second research question of this study, revealing a greater proportion of healthy items in shopping carts with premium collectable toys, compared to unhealthy food items. However, it deviates from the findings of Lambert & Goh (2020) as the highest-spending carts are those without premium toys, even though they tend to purchase fewer quantities of products.

## 4.2 CUSTOMER PURCHASE BEHAVIOUR

As previously discussed in the literature review, parents play a central role in purchasing toys and games for their children. In an effort to better assist supermarkets in tailoring marketing promotions, this study delves into the second dataset, focusing on customer behaviour related to families with children. This segment of customers is of particular interest because they are primary consumers of toys and games as proven before. By examining their behaviour, it is possible to gain insights into the potential effectiveness of promoting healthy food options alongside these toys and games.

In the Figure 6, it is evident that the most prominent number is 0.44, indicating a positive relationship between the "segm_dsc_lifestyle" and "segm_dsc_value" columns. This is because, these two columns are naturally related to each other since the “segm_dsc_value” reflects the type of purchase made and the “segm_dsc_lifestyle” represents the type of customers that made a purchase. Another noteworthy correlation is the 0.38 between "segm_baby_cd" and "segm_junior_cd," reflecting the number of households with both babies and juniors. This might suggest diverse purchases to accommodate both children and juniors. Other positive correlations in the matrix exist but lack a strong relationship. However, attention should be given to the negative correlations highlighted in Figure 6. Notably, the negative correlation between "segm_desc_value" and "segm_junior_cd" suggests a weak relationship; the presence or absence of a junior child does not significantly affect the type of purchase made. Further investigation into this negative correlation was conducted for a more comprehensive analysis.

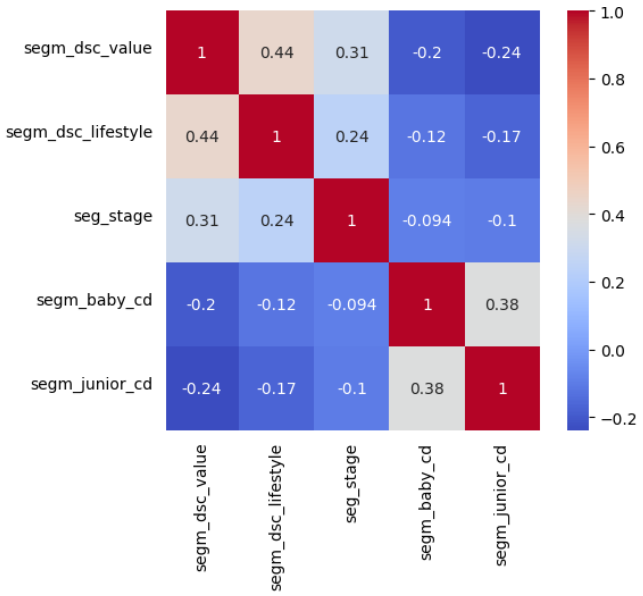


Figure 6 - Heatmap Correlation Matrix

In this dataset, there are 10.8% of clients with at least one baby aged 0-3 years old, and 16% of clients have least one junior. For future marketing purposes, it was also interesting to check how many clients have both a baby and a junior, and there are 4326 clients in these conditions. Since this dataset provides insights into the customer’s household and their type of shopping behaviour, the following analysis demonstrates a correlation between clients who have at least one baby and a junior in their household, correlating with their lifestyle option (as it is possible to see in the table 3 in the “SEGM_DSC_LIFESTYLE” under the sub-categories). With this, the analysis shows that households with at least one baby and one junior, only have 51 clients categorized as “promotional attentive”, which is also the smallest number. This could be because it may be challenging to find discounts on products that fit both babies, juniors, and caretakers/parents.

Thus, the highest number, 1301 represents the “practical parents”, which seems to make sense, since these parents must be practical to attend to both the baby and the junior needs. Finally, the last number that stands out from these correlations is the number of clients that are “the general disciplined” that have a baby and a junior at home. Even though there are only 269 clients, it still indicates that there are many households that are least likely to spend money on things that are not considered necessary, such as toys and games.

The following analysis involved calculating the mean of the variable “SEG_STAGE” across various segmentations to gain insights into the average values associated with the different customer lifestyles and their stage in life. As seen in the Figure 7, customers who are in the number 1, represent the “Family supporters”, and the average type of shopping for this group is near 4.5 which is in frequent medium amount, and in the second graphic it shows that they are disciplined when it comes to their choices in purchasing goods.

The number 2 represents “Seniors”, and their type of shopping is frequent in small quantities. This could be because usually seniors have more free time, and they cannot carry many things at once. On the second graphic, it indicates that seniors are very disciplined in what they buy, most likely because many seniors live off their retirement and know exactly what they need and should buy. Also, this is a segment that usually has a higher number of health issues and therefore they may also be disciplined in their food choices.

Furthermore, the number 3 represents “Families with young adults” and in the first graphic, it is visible that these families purchase frequently and in small quantities, just as the seniors. However, by looking at the second graphic, it shows that this is a group between being disciplined and also sophisticated as it is visible that they are far from the previous group.

Additionally, the number 4 represents “Family with kids” that shops with frequency with a medium quantity. When analysing the second graphic, this cluster is in the practical parent’s sphere, which makes sense for practical parents to purchase with some regularity and in a medium quantity since children may need more goods regularly.

Finally, the number 5 is for “Active adults” who purchase with frequency but in smaller quantities. Thus, when relating to the second graphic, this cluster is also the generalist disciplined. This might be because, since this cluster does not have any children, it might be easier to not purchase things out of the “shopping list” and there is no need to be practical, since usually active adults just purchase for themselves.

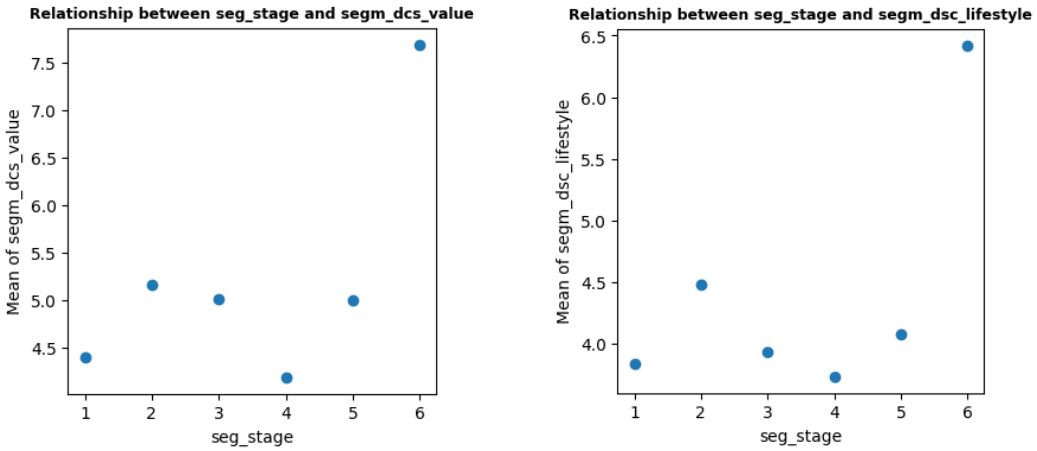


Figure 7 - Illustrative Figure Relationship of 'seg_stage' and 'segm_dcs_value' and 'segm_dsc_lifestyle'

Furthermore, in this analysis, it was important to understand families with children and their most common lifestyles along with the type of purchases they make at supermarkets. Therefore, a correlation analysis was conducted, and the graphics on Figure 8, represent families with and without babies and juniors correlating with an average type of lifestyle and an average type of purchases.

In the first graphic on Figure 8, families without babies, usually are close to being "General disciplined", which aligns with the previous analysis of only a few parents being able to be "General disciplined". Similarly, families with babies are characterized as the "Practical parents". Furthermore, in the second graphic, families without juniors are also the "General disciplined" category, while families with juniors fall between "urban sophisticated" and "practical parents". his could be attributed to the fact that as children grow older, it becomes easier for parents to adopt a more sophisticated shopping approach, and there is less need for practicality. However, if the juniors are young, parents are more likely to adopt a practical approach. Moreover, the third graph shows that families without babies tend to shop "Frequent small", suggesting a preference for purchasing more often in a smaller quantity each time. Conversely, families with babies tend to purchase "Frequent medium", possibly due to the increased attention and care infants require for both food and other goods. The last graph mirrors the previous one, indicating that families with children, in general, tend to purchase more frequently but in moderate quantities.

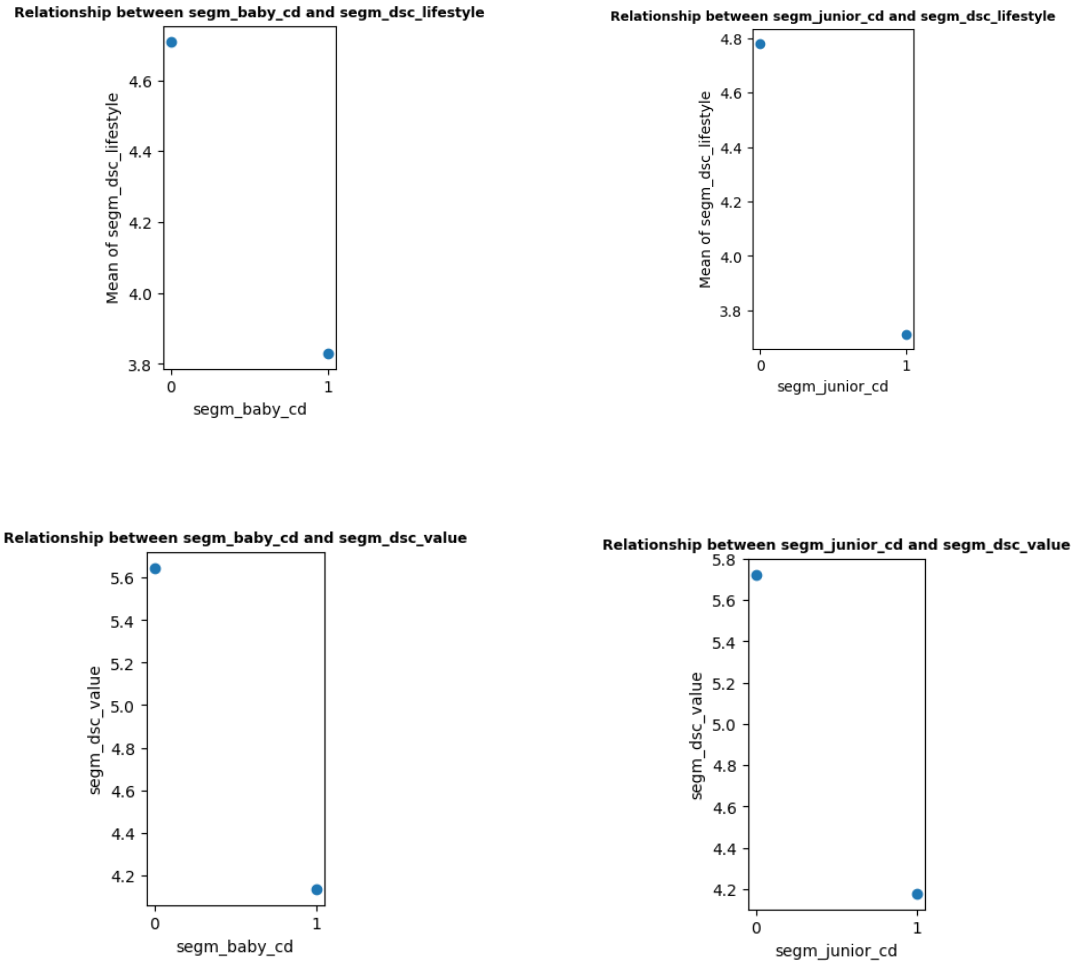


Figure 8 - Illustrative Figure Relationship of 'seg_stage' and 'segm_dcs_value' and 'segm_dsc_lifestyle'

In addition to these graphics and analysis, to understand better the quantity of families with children, and their quantity of goods per cart, the graphs on Figure 9 provide a numerical overview of how many households with children fit into the different categories of type of purchases.

As it is possible to see in the first graph of the Figure 9, most practical parents make occasional or frequent purchases and only 400 practical parents usually purchase in loyal small quantities. The second graph demonstrates the number of families with kids (both juniors and babies) that are also categorized as "Attentive promotional" making most purchases occasionally in a medium quantity, with loyal small purchases being the least common. Even though, there are not many "Promotional Attentive" customers, with children, almost 500 carts have used promotions for purchases, which appears to be a substantial number for future marketing purposes. Furthermore, the third graphic also shows almost 600 families with kids from 3 to 12 years old

making the occasional medium type of purchases. The last graphic represents 1400 families with babies up to 3 years old making a frequent medium type of purchase.

When analysing all graphics together, in the Figure 9, it becomes apparent that all families with kids tend not to make loyal purchases but instead opt for occasional and frequent purchases, always taking a medium quantity of products. For families with babies up to 3 years old, it is most common for most families to return to the supermarket at a higher frequency and take a medium amount of shopping.

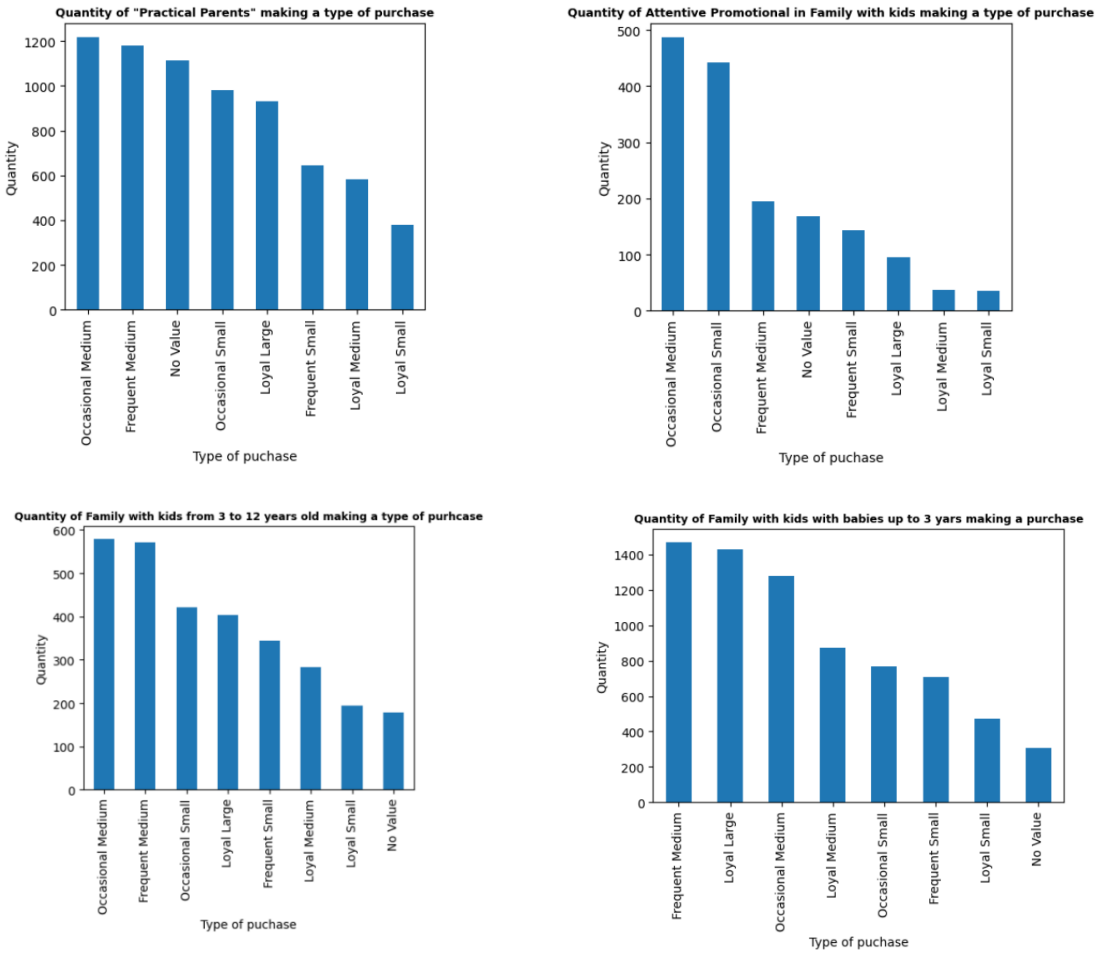


Figure 9 - Illustrative Figures of graphics showing the quantity of different clusters and their types of purchase

In summary, this analysis complements the literature review's emphasis on parental roles in toy and game purchases. It underscores the significance of understanding the unique behaviours of families with children, offering valuable insights into their shopping patterns and potential future marketing strategies for supermarkets. The data also allows for the identification of distinct customer segments within this group of families and the tailoring of promotional efforts to meet their specific needs and preferences.

# 5. CONCLUSIONS

The practice of promoting toys and games with fast food in fast-food chains has gained attention due to its significant impact on children's food preferences and associated health issues. The lack of academic research aligned with the global rise in childhood obesity, reaching 19.7% in 2021 and affecting about 14.7 million children and adolescents in the United States, revealed the importance of studying the linkage between purchasing toys and games with unhealthy food choices. The primary objective was to uncover purchasing patterns, understand the types of products commonly bought alongside toys, and identify specific customer segments that could be most responsive to marketing strategies that link toys and games with other supermarket products, specifically healthy food items.

This study found that only 3% of the shopping carts in the dataset included toys/games and this is because September is a non-peak season for toy purchases. Despite this relatively low number, 699 of these carts contained toys along with other products, indicating that customers purchase toys while shopping for groceries. Additionally, the analysis revealed that, on average, carts containing collectable premium toys had more healthy selections than carts without collectable premium toys, even though there is a higher preference for snacks observed in carts with premium toys. Thus, carts with all toys contain more healthy product selections than carts without toys. Interestingly, it was found that many carts with toys contained a specific set of products, indicating the potential to promote healthy items alongside toys. Furthermore, customers that have carts with collectable toys spend less money in their shopping then carts with regular toys that exhibited higher overall spending.

Additionally, this study helped to uncover multiple customer segments related to lifestyle, the presence of babies or juniors, and shopping behaviour. Notably, customers with both babies and juniors were likely to be "Practical Parents", prioritizing day-to-day products over promotions. Furthermore, all families with kids do not tend to purchase as loyal but instead most occasionally and always take a medium quantity of products. Thus, for families with babies, it is most common that they will return to the supermarket in a higher frequency and take a medium amount of shopping.

In conclusion, these findings can be a valuable resource for businesses seeking to enhance their marketing and promotion efforts in supermarkets. To further capitalize on these opportunities, supermarkets can consider themed promotional campaigns. By connecting toys and games with relevant healthy food products during various seasons and holidays, they can enhance the healthier product visibility but also the toy’s visibility. Especially if they craft collaborations with toy brands which offer the potential to introduce exclusive limited-edition premium items, driving excitement and sales. Thus, by implementing these recommendations,

supermarkets can not only boost toy and game sales but also solidify their position as go-to destinations for families looking for good and healthy products without having to look under the unhealthier product selection. Of course, supermarkets can connect toys and games with unhealthier food options, however, as previously stated in this study, that will not contribute to the public health nor is considered ethical. In fact, supermarkets would start mirroring the fast-food chains' experience and that not only can cause harm to children but also, may lead the parents to other supermarkets as kids tend to ask for products while they are shopping with their parents. With this, the best way for supermarkets to support public health and attract more parents' buyers, is to offer toys and games linked with healthier options, most likely with the options that are top 20 and collectable toys already purchased by them. Thus, monthly basket analysis can serve as an ongoing tool to monitor and adjust these strategies in alignment with customers' preferences.

This study also enriches academic research in the areas of customer segmentation, supermarket basket analysis, and the promotion of healthy foods alongside toys. It offers a comprehensive understanding of customer behaviour within the context of supermarket purchases, which can serve as a basis for future research in consumer studies.

While this research provides valuable insights, it is not without limitations. The dataset was collected in September, which is not a peak season for toy purchases, possibly affecting the percentage of carts containing toys and games. Additionally, the analysis relies on historical data and does not consider external factors that may influence purchasing behaviour.

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# APPENDIX A


Thank you for submitting your ethics form and additional materials for the NOVA IMS Ethics Committee evaluation.

According to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to **NEED REVIEW** in order to meet the requirements of the NOVA IMS Internal Review Board.

For this reason, the NOVA IMS Ethical Board Committee will review your proposal within **1-2 weeks** (during term time). After receiving this message, please immediately contact the Ethics Committee by e-mail (dpinto@novaims.unl.pt; cristina@novaims.unl.pt; mneto@novaims.unl.pt), including the following information:

Project No.: **DDMKT2023-11-223438**
Project Title: **EXPLORING TOY AND GAME TRENDS IN SUPERMARKET BASKETS**
Principal Researcher: **Maria José José Sim Sim dos Santos**

Lisbon, 11/22/2023

NOVA IMS Ethics Committee
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