A Work Project, presented as part of the requirements for the Award of a Masters Degree in Management from the NOVA – School of Business and Economics.

To what extent does On-Shelf Availability affect Unilever's Sales?

CONFIDENTIAL

Iuri Ismael Abdul Latif, 21917

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João Castro

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Abstract

Winning at shelf is not an easy task for most Fast-Moving Consumer Goods companies and making sure that all top-products are available on-shelf is an extremely important task. Unilever being one of the leaders in the industry has to constantly fight to make sure its products are displayed on-shelf if not it will be translated into missing revenues. This Work Project focuses on studying the effect that the absence of a certain SKU on-shelf can have on the company's performance. More specifically, this Work Project tries to estimate how many units could have been sold in OOS situations.

Keywords: Unilever; On-Shelf Availability; Sales; Out-Of-Stock

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Table of Contents

1. Introduction & Objectives

While the idea of going to a supermarket, getting the desired products that were written on a grocery list and going back home seems pretty easy, who has never arrived at the freezer where your favorite ice cream is supposed to be, and you couldn't find it? The Fast-Moving Consumer Goods (FMCG) sector is one of the most dynamic and important sectors worldwide. In fact, the global FMCG industry reached a value of $4,2 trillion in sales by the end of 2018, in which Western Europe was responsible for 21% of it (Euromonitor, 2019). This sector relies on selling retail products on supermarkets which are purchased on a high-frequency rate, at a relative lower price and present a short shelf-life, hence the high-competitiveness within the industry. Fast, adaptive and competitive manufacturers are resilient to be the number one and must innovate constantly seeking better ways to overcome its competitors.

One of the most challenging situations retailers face is shelf space. With an increasing offer of products from the various manufactures within the market, there isn't enough room for them all and the management of the retail shelf space must be thoroughly thought. Not only it is crucial for the manufactures' products to be visible on shelf, but also the share of the shelves in which their products occupy it is extremely important. Depending on the amount of the shelves occupied, more likely it is to get the consumers' attention.

Nonetheless, the ultimate and most determinant factor is whether a consumer that is in front of the shelf, if the product he is looking for is there or if it is Out-of-Stock. After owning the possibility of being in one of the most disputable places in-store, it is mandatory for both retailers and manufacturers to make sure that all of the products are displayed on-shelf, since "where else could a retailer find so much potential revenue, without spending to attract new customers?" (Corsten and Gruen 2003). Knowing that

90% of all consumer decisions are made at the point of sale (POS) (GFK, 2017), the "availability of products [has become] the new battleground in the FMCG industry" (Corsten and Gruen 2003).

The purpose of this work project is to investigate how the On-Shelf Availability/Out-of-Stock situation affects Unilever's sales. I am currently working at Unilever FIMA on the Customer Development department in which we are constantly facing OOS situations and trying to overcome and enhance the procedures in order to correct them. Which is why I have chosen to analyze the direct effects that the absence of a certain product on-shelf has on Unilever. Given I am working there, I have access to information that I believe it can enrich this study which will be complemented by a further analysis.

2. Contextual Background

In order to achieve the proposed objectives of this work project, it was essential to understand the performance of the Portuguese FMCG retail market in which Unilever operates. Thus, a thorough research was conducted where it was analyzed Unilever's performance within the Portuguese market, its fields of operation, its distribution channels as well as its main competitors.

2.1. The FMCG retail market in Portugal

According to the most recent quarterly report published by Nielsen (Unilever FIMA, Q2'19), the Portuguese FMCG retail market has continuously improving its performance in value with an increase of 3,6% on the first semester of 2019, compared to the homologous period. The main growth driver is manufacturers' sales which increased by 5% in 2019 whereas private label represents a slight growth of 1,2% (**Appendix 1**). Furthermore, Portuguese households are shopping more frequently and buying more

expensive baskets this year, with an increase of 3,6% on frequency and 1,9% on amount spent per act, leading to the increase in value of FMCG market (Kantar, S1 2019).

This positive evolution in the retail market performance is accompanied by the continuous growth in the Portuguese economy, that after years of recession has been able to improve its economic activity in which the country's GDP increased by 2,4% in 2018 and it is projected to reach a growth of 2,0% by the end of 2019 (Banco de Portugal, 2019), with an upward path forecasted until 2021 (**Appendix 2**). Also, according to Nielsen's Global Survey Consumer Confidence which measures "consumers' outlook on the economy, job prospects, financial outlook, their biggest concerns and spending and saving intentions", Portugal presented the highest level of confidence of all times reaching a result of 94 on the first half of 2019, which is reflected on the growth of FMCG market in Portugal.

In terms of the retail market arrangement, one can divide it into three broader segments namely Hypermarkets & Supermarkets and Discounts (**Appendix 3**) with the former being the most relevant one in terms of value sales. Also, the Hyper & Super channel can be sub segmented into Large Super, Small Super and the Traditional channels in which banners such as *Meu Super* and *MyAuchan* are included. Looking at the trade structure evolution, the number of stores in Portugal has been decreasing drastically since at least 1995, when more than 35,000 stores were available nationwide and until 2016 approximately 20,000 of those were closed. Nonetheless this reduction is almost entirely justified by traditional stores, whereas both the Hyper and Super channels had the opposite effect, reaching a combined number of 1,984 stores in Portugal and being responsible by 90,8% of all sales in value. However, regarding growth in performance per channel, currently it is the Large Supers channel which is the most dynamic one with

an increase of 8,7% on value sales during the first semester of 2019 followed by the Traditional and Hyper channel (**Appendix 4**).

Undoubtably, *Sonae* and *Jerónimo Martins* lead the market both in value and volume shares, with a combined value share of 56,4% (Kantar, S1 2019), but it is the latter which presents the highest growth, increasing both in value and in volume comparing to the homologous period.

Regarding the products' categories included in the FMCG market, despite varying largely between retailers, for the purpose of this work project it will be considered the four major areas of Unilever's operation which are subdivided into categories (**Appendix 5** – Unilever FIMA's operation categories). With an overall growth of 3,6% of the FMCG market as mentioned above, all four areas faced a positive performance comparing to the previous year. Nevertheless, it is the Refreshments area which increases the most with a drastic increase of 9,4% in value sales.

Considering the manufactures that lead the Portuguese FMCG market, during the latest Moving Annual Total (MAT) Nestlé leads the ranking and Unilever follows up by a slight difference, being the second largest company in Portugal in terms of value sales accounting for €346 M (Nielsen, Q2 2019). Companies such as Procter & Gamble, L'Oréal and Reckitt Benckiser also have a big presence within the industry. Nonetheless there is another big competitor within the market which is the Distributor's Own Brands (DOB). DOB's can be defined as the combination of all products that belong to Private Label, which is "a brand created and owned by a reseller of a product" (Kotler and Armstrong), and it has gradually increased its presence not only by enlarging their portfolio, but also in terms of sales. In fact, by the end of 2018 it represented 34% of the market in value sales reaching its highest market share of 37% in 2012 and accounting for €2,8 B by the end of the first half of 2019 in MAT.

As it is known, the panorama of the retail market drastically changed on the 1st of May of 2012 when, during the peak of a financial national crisis, the Pingo Doce chain first introduced mass-promotions in which it offered 50% of discount in purchases equal or higher to 100€. The FMCG market has ever since adopted to this behavior and nowadays it still belongs to the core of all retailers' strategy. In fact, during the first half of 2019, value sales on promotion accounted 47,5% of overall FMCG sales. As it is expected, manufacturers depend greatly on promotion hence the overall investment from manufacturers in promo-strategy has been increasing over the years reaching a value on-deal of 55,6% in 2019, whereas private label's sales on promotion only account 31,6%.

2.2. Unilever FIMA in Portugal

Following the merger of Margarine Unie and Lever Brothers, which were respectively a Dutch margarine and a British soap producer, Unilever was founded in 1929 and it is a global consumer packed goods (CPG) company with four business segments (Big C) including Foods & Refreshment, Home Care and Beauty & Personal Care. After its foundation, through mergers and mainly corporate acquisitions, for instance the acquisition of Lipton in 1971, Best Foods and Ben & Jerry's both in 2000 which nowadays all have a great relevance on the company's performance, Unilever has ever since been increasing and diversifying its brands portfolio and expanded its presence worldwide, owning 400 brands across the globe, in approximately 190 countries, employing more than 150 thousand people.

With an annual turnover of €51 billion in 2018, twelve of Unilever's brands such as Lipton, Knorr, Dove, Rexona, Hellmann's and Omo, were individually responsible for €1 billion of the total turnover last year. Regarding the turnover per operating segment,

Beauty & Personal Care and Foods & Refreshment combined accounted for approximately 80% of the total turnover, whereas Home Care accounted for the remaining 20%. Furthermore, in terms of geographical area, even though Europe accounts the least for turnover with a contribution of 24%, it presents the highest operating margin. Looking to the competitor landscape, Unilever is Europe's second major company within the FMCG industry with €12,1 billion worth of sales in the first semester of 2019, with Nestlé leading the ranking (**Appendix 6** – Europe FMCG's Competitors Landscape), while on a global overview it is the fourth largest company in the world in terms of revenue (OC&C, 2018).

Under the mission "Purpose-led, Future-Fit", Unilever is committed to grow in the most sustainable way as possible by carrying out purposes for most of its brands and creating initiatives such as Domestos helping to improve people's health and access to better sanitary conditions in remote areas, Knorr sourcing sustainable raw materials, Seven Generation halving its environmental footprint and Dove fighting for women's empowerment.

In Portugal, Unilever' structure is a peculiar one when compared to other countries. In 1949, Unilever entered on the Portuguese market under a joint venture with the *Jerónimo Martins* SGPS group, in which the latter agreed to hold a participation of 45%. After many years since its introduction in Portugal and through acquisitions and disposals, the joint venture was renamed several times and it was known as Unilever *Jerónimo Martins*, Lda for 11 years when the companies FIMA, Lever and IgloOlá merged in 2007. By the beginning of the last year, Unilever alienated its global margarine business division impacting 66 counties, including Portugal, in which brands like Planta, Flora and Becel operated (Aveiro 2018). Also, in 2018, followed by this massive change on the company's portfolio, the Portuguese joint venture decided to change its designation

to Unilever FIMA which is how it is known nowadays. From the aforementioned 400 brands owned, Unilever FIMA currently offers a brand portfolio of 38 brands within the Portuguese market such as Skip, Olá, Calvé, Axe and Comfort among others (**Appendix 7**), operating on the same segments as its international affiliate.

In Portugal, Unilever FIMA divides its field of operations into three sectors: the In-Home (IH) branch that works directly with retailers with the main purpose to sell straight to the consumer through hyper and supermarkets; the Out-of-Home (OOH) sector, focused on the *horeca* channel with main emphasis on the Foods & Refreshment categories; and the Unilever Food Solutions (UFS) which is targeted towards restaurants by working directly with them and providing services, such as helping creating personalized menus for establishments, and quality products designed to improve the cooking experience. Nonetheless it is the In-Home sector the most relevant one for the company's performance since it contributes the most not only in value, but it is also the sector that shows higher penetration rates. For the purpose of this work project, as of now our focus will be the IH sector of Unilever FIMA which, with the goal of simplifying, will be designated hereafter as Unilever.

As mentioned above, even though Unilever is the second-best competitor in terms of value sales in the FMCG market in Portugal after Nestlé, it is performing two times better than the overall market with a value growth of 6% and it is the company that gained the most in absolute values in which the main driver for this positive performance has been especially volume and price increasements that have also supported a healthy growth.

In spite of offering its products in multiple retailers across the country on different channels, the retailers *Sonae* and *Jerónimo Martins* combined are responsible for 53% of Unilever's In-Home turnover, followed by Intermarché and Auchan which individually represent 7% and 5% respectively (Unilever, Q1 2018). Looking in detail to the

performance by categories, Beverages and Laundry represent approximately 60% of all Unilever's sales in value, while on units sold it is Savory that is leading the ranking (Nielsen, W44 YTD'19). On the other hand, diving into the top two retailers it is showed that the categories that sell the most for both customers are Fabrics Solution and Ice Cream performing approximately in the same way for both retailers (**Appendix 8**).

2.3. On-Shelf Availability

In a situation in which a customer is searching for a specific product within its the expected shelf space and cannot find it, it is called an Out of Stock (OOS) condition, according to Ranjan & Puri (2012), and the reaction of the shopper to that situation may be influenced by the product, the situation and/or characteristics of the shopper itself (Campo and Nisol 2000). On the other hand, On-Shelf Availability (OSA) is the measure used to calculate the quantity of products available "at the place a costumer expects and at the time he wants to buy the product" (Moorthy et al. 2015) and it can be used as the opposite of the OOS metric.

Not only the stock-out situations can be negative for the consumer that wants to buy that specific product, but also for both the retailers and the manufacturers. For instance, in case of a stock-out, manufacturers may "lose more than half of his buyers to competitors" (Campo and Nisol 2000), retailers' lost sales may amount to 14% of total sales (Grubor and Milicevic 2015) and the loyalty to that specific brand and store may be hurt (Emmelhainz and Stock 1991).

In fact, "in an era where retail competition is so fierce than ever" (Corsten and Gruen 2003), there is "pressure on retailers to improve both inventory turnover and customer service" (Ranjan and Puri 2012) since, based on literature (Campo and Nisol 2000; Liu

and Zinn 2008; Ranjan and Puri 2012) depending on the reaction of the shopper, five possible cases are most frequent to occur: substitute for a different brand (brand switch); substitute the product (same brand, different attributes); cancel the purchase; continue purchase on a different store (store switch) and delay the purchase at the same store.

A study made by Growth from Knowledge (GfK) in 2017, named "Unilever Shopper Experience", analyzed the purchase journey of Portuguese consumers for the 14 categories in which Unilever FIMA operates in order to provide a better understanding of the shopping process and experience. The entire in-store journey was studied from the moment the shoppers entered the store to the moment they effectively purchased the items and left the store, dividing the experience into three sections: Selection Questionnaire (scanning the planned categories), Behavior Grid (monitoring the shopper) and In-Depth Questionnaire (evaluation of the shopping process). With a total combined of 2,109 interviews on four different cities in Portugal on the six best-performing retailers on all three channels, multiple conclusions were arrived. Among others, the most relevant one which matches to our previous findings is the consumer's attitude when faced to an OOS of a specific product. When studying the shoppers' consumption behavior, it was found that, for the overall categories, 34% of the respondents replaced the product they were looking for abdicating either the brand, or either switching certain attributes of the product itself or choosing a different product type within the same brand; 10% were willing to go to another store to purchase that specific item; while the vast majority, more specifically 56%, preferred to postpone that purchase and buy on the next time they visit that same store. It is possible to say that these results are aligned with past studies that were performed (Campo and Nisol 2000; Liu and Zinn 2008) and arrived to similar conclusions. Nevertheless, these outcomes may change according to variables related to consumers' preferences. For instance, depending on the perceived uniqueness of the SKU

(Stock Keeping Unit) for the shopper, it can affect the possibility of a follow-up visit to that specific store to buy that particular product (Liu and Zinn 2008). Also, consumers more conscious to both price and quality have a tendency of being more loyal to a certain scope of products (Sloot, Verhoef, and Franses 2005)

3. Addressing the Work Project's Objectives

After understanding the overall background within the Portuguese FMCG sector and, more specifically, Unilever's performance within it, in order to suitably address the Work Project's objectives, secondary research was conducted. To understand 'to what extent does On-Shelf Availability affect Unilever's sales?', a quantitative research approach was selected, given the amount of data available from Unilever's side regarding this topic.

3.1. Methodology

To understand the actual stores' behavior, the Unilever's sales force team is divided by specific regions of the country, by categories of products and by retailers. In this way, on a weekly basis physical visits to those stores are made which makes it is possible to keep track on-field the performance of Unilever's SKUs in-store of the top retailers. While performing those visits, besides implementing visibility spaces such as secondary placement materials, checking the prices of Unilever's products, among other activities, a crucial one is to check if the top-sellers SKUs are present on-shelf or if they are on an OOS situation. Hence one of the methodology methods to be considered is the OSA reports filled by the sales force team.

Moreover, Unilever has an international auditing project named "Perfect Store" in which monthly audits are performed on 130 stores selected throughout the country on

twelve categories from all four segments of operation. This project, which was implemented in Portugal in 2017, consists on a sales force representative taking a photo of the modules in-store using a specific app, and through image recognition the system automatically identifies if the top-seller SKUs (Core of the Core) and the second-top seller (Must-Have SKU) of each category are in fact on-shelf. Based on that data, it is possible to determine not only the level of OSA per category, but also the Unilever's share of shelf (SOS) comparing to its competitors, among other KPI's. In this way, Perfect Store Audits shall be included on the methodology, since it can provide useful information that the previous method might lack.

Furthermore, an outsourced online platform called "Just in Time" (JIT) is consulted daily not only by the sales force team but also by the various Unilever's departments. From data provided directly from retailers at the beginning of each day, this platform presents useful information for all Unilever's categories for most stores across the country straight from a website. When consulting this platform, it is possible to know the inventory that each store had at the beginning of that day of all Unilever's products available within that store. In the case of facing an OOS situation, it is easier for the field representative to check whether there is stock of a specific product on the warehouse or if it is on transit, for instance.

Additionally, this platform also provides information regarding the daily performance of each store, i.e. how much of Unilever's products were sold per store per retailer by the end of each day. Using data from the products' barcodes that were scanned on the check-out machines, relevant outputs can be extracted since this method provides information not only about value sales, but also unit sales. This information can also be reduced to the smallest detailed providing specific aspects for the business.

Nonetheless, some methods have its limitations hence the importance of combining all of them. The following Table 1 resumes the available data useful to achieve the Work Project's topic, as well as the collection period for each method.

Table 1: Available data for Work Project Methodology

1. OSA Reports This method provides information of visits that the field representatives do in-store on a weekly basis;	**Details:** Reports for 15 Unilever categories (Dressings, Soups, Cooking Aids, Snacking, Ice Cream, Leaf Tea, RTD, Fabrics Cleaning, Fabrics Conditioning, HHC, Deodorants, Hair, Shower, Face & Baby and Skin Care) on 8 retailers (*Continente*, *Continente Modelo*, *Continente Bom Dia*, *Pingo Doce*, *Auchan*, *Intermarché*, *E.Leclerc* and *El Corte Inglés*) for 375 stores; **Data Collection Period:** December 2018 to December 2019 (Weekly Basis); **Objectives:** Reports filled by the sales force team useful to study situations in which the level of OSA was low.
2. Perfect Store Audits "Perfect Store" is a Unilever international project that consists in performing monthly audits through image recognition based on photos taken at the stores' shelves by the field team multiple KPI's such as OSA, SOS and NPD are evaluated;	**Details:** Audits performed on 12 categories (same as above excluding Snacking, HHC, Face & Baby Care) on 5 retailers (same as above excluding *El Corte Inglés*) on approximately 130 stores per month; **Data Collection Period:** January 2017 to December 2019 (Monthly Basis); **Objectives:** To understand each store's performance at the moment of the audit.
3. Just in Time (JIT) – Warehouse Stocks & Sales Outsourced online platform which uses data directly from stores based on the products that were sold to the final consumer, as well as the stocks inventory for each store;	**Details:** Stocks, value (€) and volume (units) sales on 15 Unilever categories (same as the OSA Reports) on 8 retailers (*Continente*, *Continente Modelo*, *Continente Bom Dia*, *Pingo Doce*, *E.Leclerc*, *Auchan*, *Dia* and *Intermarché*), however only the first four retailers provide daily information; **Data Collection Period:** January 2017 to December 2019 (Daily Basis); **Objectives:** Analyze both Unilever's sales and its stocks.

3.2. Methods and Data Collection

Due to the extremely large amount of data available to study, some restrictions had to be made mainly because of the frequent overload of the software used for this Work Project. In this way, matching the details and the data collection period that the three methods have in common it was possible to narrow down the data collection.

Starting with the retailer subject of study, based on the weight of Unilever's sales in 2018 (**Appendix 9** – Unilever Value Sales by Retailer in 2018) it was decided to focus on *Sonae* since it represented 44% of all Unilever sales in value terms. More specifically the banner within *Sonae* with the highest influence on sales is the banner *Continente* (**Appendix 10** – Weigh of Value Sales for each Sonae's banner) hence it is the one that ended up being chosen for this analysis. Furthermore, to achieve a better level of detail it had to be decided which stores were to be evaluated within the chosen banner. Based on a sales' criteria, more specifically, stores belonging to *Continente* that individually sold Unilever products worth of over 1 million euros in 2018 were selected. In this way, a total of 30 *Continente* stores across the country shall be subject of study (**Appendix 11** – List of selected stores with Unilever's sales over €1M).

Then, in order to determine which Big C and Categories were to be studied, based on the OSA Reports for the 12 mutual categories between the three methods, the top-two Big C's that represented the highest level of OOS situations for 2018 were the ones chosen. Foods and Refreshment presented levels of 3,3% and 4,2%, respectively, of OOS situations while Home Care and Beauty & Personal Care scored values below 3%. Following this, to choose the categories a similar logic was applied. The top-five categories with the highest levels of OOS within the selected Big C's (Foods and Refreshment) were Dressings, Cooking Aids, Soups, Ice Cream and Leaf Tea and thus they were chosen to be evaluated (**Appendix 12** – Level of OOS situations per category in 2018.

On the other hand, a different approach was taken into consideration in order to determine which SKUs would be studied. Considering that within the FMCG industry, companies, including Unilever, are frequently either increasing or decreasing its product portfolio hence making it difficult to keep track of stocks and sales of all Unilever's

SKUs. Therefore, the selected products had to be part of the permanent portfolio of the respective category and must be relevant towards the business. In this way, the top-seller products were chosen since they prove to be not only the ones that stay the longest within the company's portfolio but also have a great impact on sales. In fact, those products, which are called internally as Core of the Core (COTC) products (**Appendix 13** – Core of the Core (COTC) Products per category), are SKUs that combined contributed at least 60% for the category's annual revenue, thus given its importance they were selected to be analyzed.

Concerning the data collection period, even though data with a time span of two years being available, for a more precise detail without overloading unnecessarily the software, it was decided to focus on the past semester of 2019 since it is the most recent period and better to further action. On Table 2 can be found the data that should be used for this Work Project and which is available for the three methods mentioned before.

Table 2: Data used for Work Project Methodology

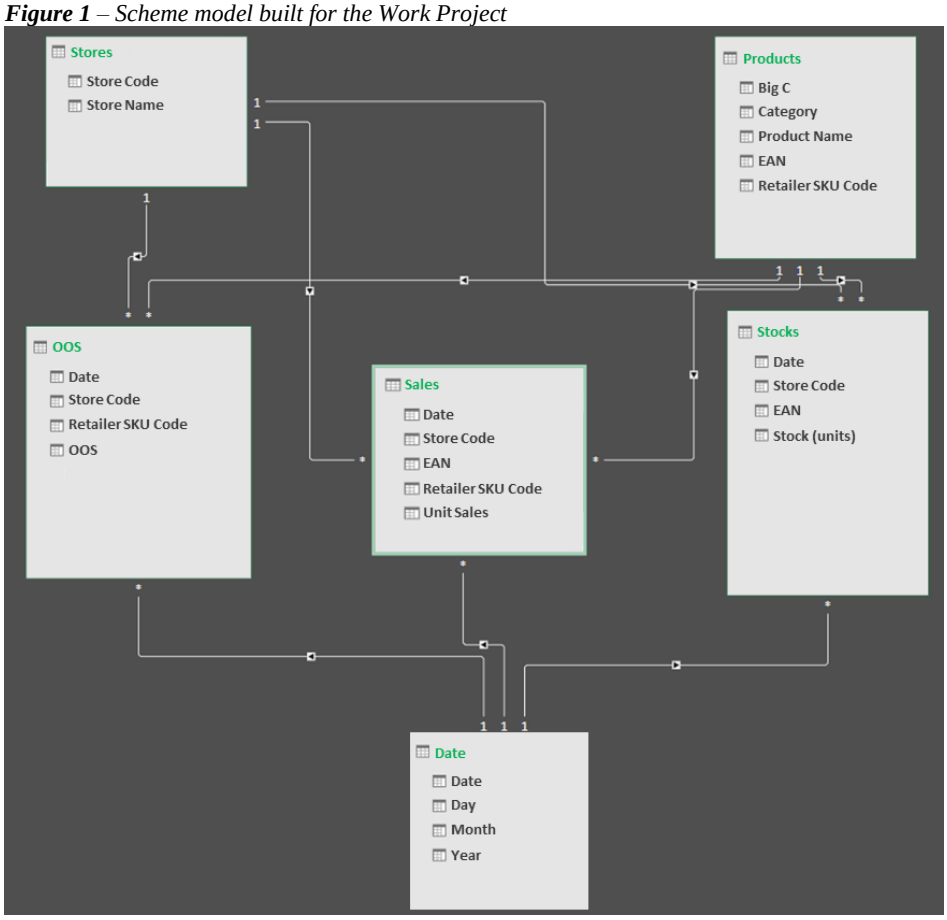
Field	Attribute	Sample Size
Retailer	Sonae	
Banner	*Continente*	30 stores
Big C	Foods Refreshment	
Categories	Dressings Cooking Aids Soups Ice Cream Leaf Tea	39 SKUs (**Appendix 14** – List of selected SKUs)
Collection Period	June 2019 to November 2019	183 days

3.3. Hypothesis Development

In order to estimate the effect that an OOS situation might have on Unilever's sales, a model was built using the aforementioned the methods. After extracting the data from the respective platforms, the result was a set of three databases for each method. For each database (Sales, Stocks and OOS) each one was composed by 193.774, 178.436 and 525 records respectively. Therefore, due to the extremely large amount of data to work on, the software Power Pivot which is included in the Microsoft Excel was the chosen one to build the desired model.

After creating three Fact Tables (Sales, Stocks and OOS) it was necessary to create the Dimension Tables that would support additional data that wasn't included in the former tables. In this way, three Dimension Tables (Products, Stores and Date) for the products' characteristics, stores' attributes and date were added to the model. After linking the correct fields from each Dimension Table to the Fact Tables in question based on 1-to-Many relationships, the scheme represented on **Figure 1** – Scheme was derived.

Figure 1 *– Scheme model built for the Work Project*



Since the core of the Work Project topic is based on the effect that the absence of a certain product on-shelf might have over sales, it was necessary to determine in which days there were indeed OOS situations. Using both the OSA Reports and the Perfect Store Audits it is possible to certainly know in which days the field representative went personally to the different stores in question and if whether it was in fact on-shelf or not. Hence those days in which the OOS situation was reported, were taken into consideration to further study. Nonetheless, a major limitation of these two methods is the frequency in which each one is made. Since the routines of the sales force team are developed at the beginning of each trimester and with the idea of covering the largest number of stores per month as possible, given that each store must be visited at least once a month, it is frequent to find stores on the OOS database which were just visited and audited once a month.

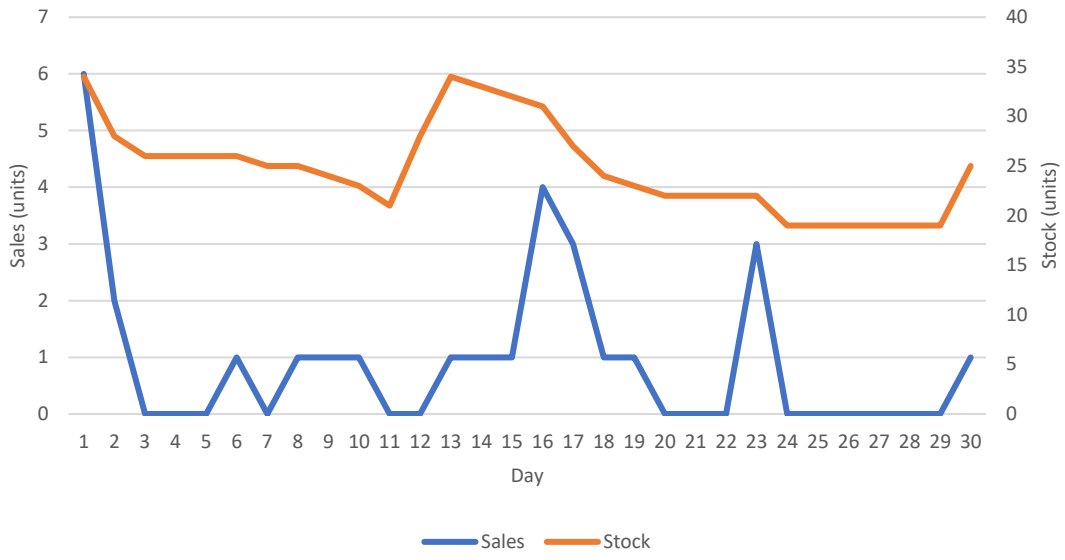
To tackle this situation, an assumption had to be made. With no surprise, there are many days that a product isn't sold, however considering that we are analyzing Core of the Core SKUs in the top thirty stores of *Continente* in terms of sales, a day without any record of sales of a specific product meant a possible OOS situation. To further incentivize the possibility of facing actually an OOS situation, a relationship had to be done between the sales records and the data retrieved from the Stocks database.

Looking at the daily records of warehouse stocks for each COTC SKU per store, it was computed the variation of stock units comparing with the previous day. In this way, for negative values it meant that stock left the warehouse and that the product had been refilled on-shelf; positive ones meant that the store had received a new batch of that specific product on that day and zero values meant that there wasn't either a refill nor a new entrance on the warehouse. Combining that logic with the Sales database, it is now possible to promote the possibility of an OOS situation. Consequently, looking at the detail by store, days that registered no record of sales of a certain product and knowing that the stock variation of that same product on that same store was null, meant that the product wasn't available on-shelf. What this actually means is that since the stock has been still on the warehouse waiting to be taken to the shelves, it hasn't generated any sales. Based on that logic and considering the fact that the mentioned SKUs are top sellers, it was possible to approximately determine which days OOS situations occurred besides the days that were registered by the sales force team when visited the stores personally.

For better understanding, on **Figure 2** – Daily evolution of stocks and sales units for CARTE D'OR Strawberry Merengue on Continente Matosinhos it is represented the units sold as well as the stock units for the CARTE D'OR Strawberry Merengue on *Continente Matosinhos* for the month of November of 2019. Based on the graph below, it is easier to

see which days possibly lacked sales due to OOS situations. Days that are flat for both unit sales and stock units, shall be considered to be studied.

Figure 2 – Daily evolution of stocks and sales units for CARTE D'OR Strawberry Merengue on Continente Matosinhos



Source: Author based on the model built for the Work Project (2019)

Combining both the days that the field representative visited the store and the days estimated as mentioned previously, it is now possible to further evaluate the impact that those days had on sales.

Afterwards, it was necessary to understand the daily performance of each COTC SKU on the banner *Continente* as a whole. This is necessary since in order to create an estimative of the potential sales of a certain SKU, one must understand how that SKU performed across the country due multiple variables, for instance whether that product was under promotion hence registered higher sales, whether the day in question is during a weekend leading to higher sales, whether that product suffered from seasonality effect which is most frequent in the Ice Cream category, among other variables that may have affected its sales. In this way, it was summed up the daily unit sales for each SKU on all stores and then normalized those values for each month. Setting the maximum sales as

100% for each month and 0% for the minimum sales registered, it was possible to obtain a reliable weight per day of the performance of each SKU.

Furthermore, now that the individual performance of each SKU was taken into consideration it was also necessary to compute the same calculations to each category as a whole, since one SKU doesn't perform as all SKUs and that each category has its own tendency, not only seasonal but also promotional, for instance. After arriving to the daily weight per day of the performance of each category it is now closer to arrive to the Work Project objective.

Additionally, since the performance by category and, more detailed, by SKU is evaluated, it is mandatory to understand the efficiency of each store comparing to the overall *Continente* stores. This process is of extreme importance because even though these are the top thirty stores that sold more than €1M of Unilever products, not all stores perform the same way as each other, hence it is needed to study the individual weight that each store has on the grand total of stores.

Lastly, one should also take into consideration the month in question. That is, as mentioned above the seasonality effect can have a big influence on the number of units sold, therefore even though a single SKU didn't perform as good as expected on a specific store on a specific day, one should combine all sales from all stores from all SKUs within the same category for each month, in order to understand the monthly evolution of each category. Saying this, it was also computed the total of units sold for each of the five categories included in this analysis divided by month.

Finally, it is now possible to achieve the main objective which is to estimate how much more could each store have sold of a certain COTC SKU given that the store had that SKU on-shelf. After all the aforementioned computations, a new table was created

with the maximum level of detail as possible combining all the Dimensions Tables and the Fact Tables to provide specific outcomes. Being able to separate each COTC SKU for each category in each store, and multiplying the daily weight of the performance of each SKU, with the daily weight of the performance of the respective category, with the weight of the performance of the store in question, and lastly with the total number of units sold for that month on that specific SKU countrywide, the estimative of units that could have been sold is determined with the greatest detail as possible.

4. Discussion of the results

Afterwards it was necessary to combine all information provided from the methods above and the following results were arrived. On the following table it is represented the total amount of units that could have been sold for each category for each month considering those SKUs were on-shelf.

Figure 3 – Estimative of units sold in case of not OOS situation

Units	**Dressings**	**Sav - Cooking Aids**	**Sav - Soups**	**Ice Cream**	**Leaf Tea**
Jun	1014	962	1423	943	1534
Jul	918	717	1462	779	1594
Ago	1041	688	1420	1024	1659
Set	838	601	1233	1218	1614
Out	962	722	1200	2047	1164
Nov	771	569	1171	2576	1072

Multiplying the value of each SKU for its respective retail selling price, it is easy to determine an estimate increment that Unilever could have seen in terms of value as shown on the table below, combining per category.

Figure 4 – Estimative of Sales Values

Sales Value (€)	Dressings	Sav - Cooking Aids	Sav - Soups	Ice Cream	Leaf Tea
Jun	2575,64	2355,98	2180,11	4381,67	3633,68
Jul	2163,71	1925,63	2225,79	3534,51	3893,08
Ago	2311,41	1720,52	2187,52	4657,86	4017,15
Set	1957,15	1497,19	1867,15	5538,92	3892,91
Out	2232,04	1777,98	1881,57	9297,03	2755,58
Nov	1834,05	1508,31	1797,53	11659,54	2522,68
	13074	**10785,61**	**12139,67**	**39069,53**	**20715,08**

5. Discussion and recommendations

Based on the Work Project, it is possible to show how important it is to correctly display all SKUs on-shelf since it can be translated into missing opportunities hence missing revenues.

It would be advised for the company to invest more in repositions of stocks, as well as rearrange the visits of the sales force team based on the stock level for these SKUs. In this way, if there was no variation on an important SKU it would be mandatory for a field representative to go to that store and see what is happening.

5.1. Further Research

In the future, it would be advised to perform this exercise for all categories in which data is available since it is relatively easy to replicate it to other categories.

6. References

https://www.bportugal.pt/en/page/projecoes-economicas

https://www.nielsen.com/ssa/en/solutions/measurement/global-consumer-confidence/

https://www.sabado.pt/portugal/detalhe/trabalhadores-do-pingo-doce-em-greve-a-1-de-maio

https://www.unilever.com/about/who-we-are/about-Unilever/

https://www.unilever.com/about/who-we-are/our-values-and-principles/

https://www.unilever.com/investor-relations/annual-report-and-accounts/

https://www.occstrategy.com/pl/about-occ/news-and-media/article/id/3262/2018/07/the-occ-fmcg-global-50

https://www.unilever.com/Images/unilever-charts-2018_tcm244-534891_en.pdf

https://www.unilever-fima.com/about/history-of-unilever-portugal/

https://www.unileverfoodsolutions.pt/somos-chefs-a-apoiar-chefs.html

https://tradingeconomics.com/portugal/gdp

Aveiro, Isabel. 2018. "Unilever Vende Margarinas Becel e Flora Por 6,82 Mil Milhões." Público. 2018. https://www.publico.pt/2018/01/08/economia/noticia/margarinas-planta-becel-e-flora-vao-ser-vendidas-pela-unilever-a-kkr-1798605.

Campo, Katia, and Patricia Nisol. 2000. "Towards Understanding Consumer Response to Stock-Outs." *Journal of Retailing* 76 (2): 219–42.

Corsten, Daniel, and Thomas Gruen. 2003. "Desperately Seeking Shelf Availability: An

Examination of the Extent, the Causes, and the Efforts to Address Retail out-of-Stocks." *International Journal of Retail & Distribution Management* 31 (12): 605–17. https://doi.org/10.1108/09590550310507731.

Euromonitor. 2019. "Euromonitor International Reveals the Top 100 Megabrands Ranking." *Euromonitor International*, no. March: 1–2.

Grubor, Aleksandar, and Nikola Milicevic. 2015. "Measuring On-Shelf Availability of FMCG Products." *Industrija* 43 (1): 53–71. https://doi.org/10.5937/industrija43-6683.

Liu, Peter C, and Walter Zinn. 2008. "A Comparison of Actual and Intended Consumer Behavior in Response to Retail Stockouts." *Journal of Business Logistics* 29 (2): 141–59.

Moorthy, Rahul, Swikriti Behera, Saurav Verma, Shreyas Bhargave, and Prasad Ramanathan. 2015. "Applying Image Processing for Detecting On-Shelf," 451–57.

Ranjan, Jayanthi, and Sandeep Puri. 2012. "Out of Stock Conditions Affecting Customer Satisfaction and Customer Loyalty" 6 (April): 38–53.

Sloot, Laurens M., Peter C. Verhoef, and Philip Hans Franses. 2005. "The Impact of Brand Equity and the Hedonic Level of Products on Consumer Stock-out Reactions." *Journal of Retailing* 81 (1): 15–34. https://doi.org/10.1016/j.jretai.2005.01.001.

A Work Project, presented as part of the requirements for the Award of a Masters Degree in Management from the NOVA – School of Business and Economics.

To what extent does On-Shelf Availability affect Unilever's Sales?

APPENDICES

Iuri Ismael Abdul Latif, 21917

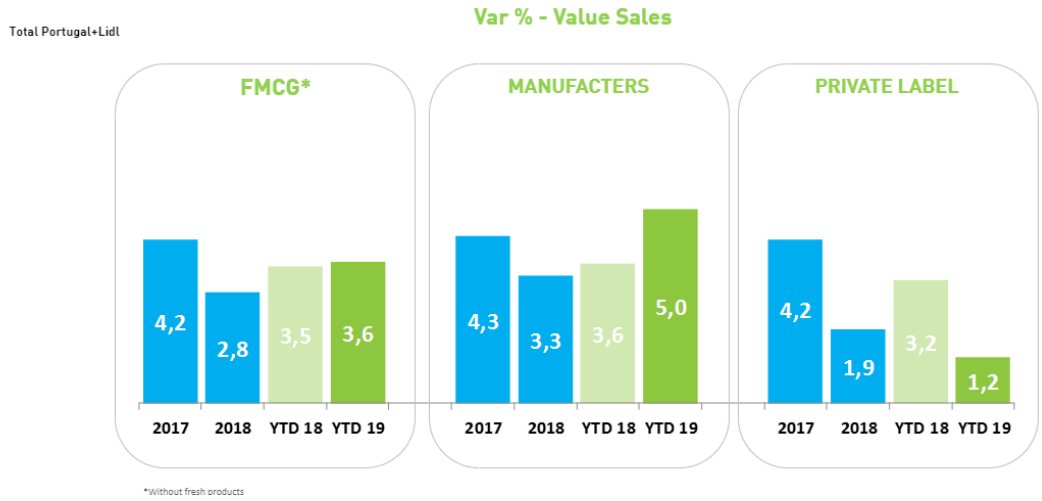
A Project carried out on the International Masters in Management Program, under the supervision of:

João Castro

06.01.2020

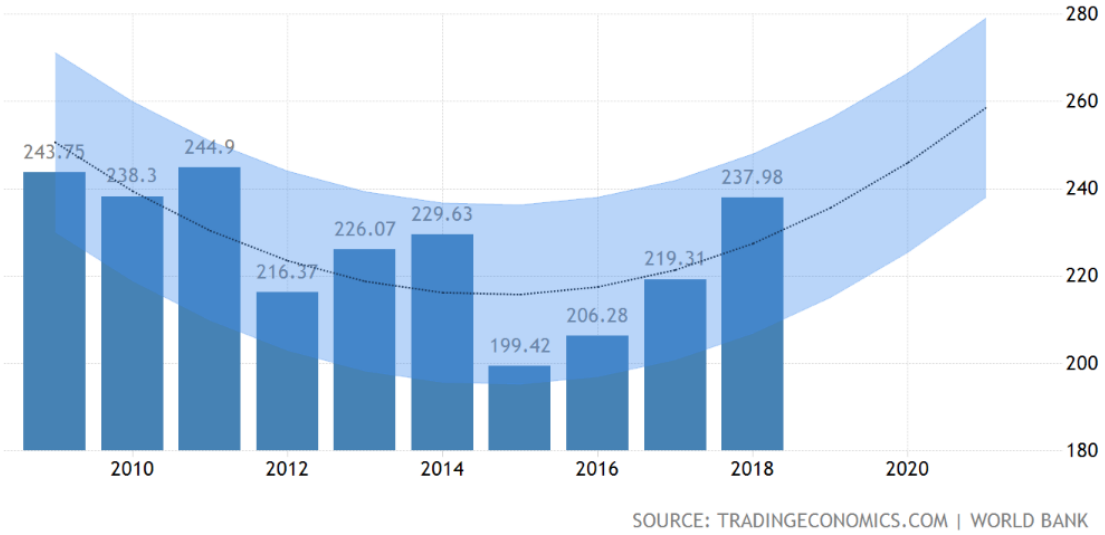
List of Appendices

Appendix 1 – Portugal FMCG – Variance of Value Sales



Source: Nielsen, W24 2019

Appendix 2 – Forecast of Portugal's GDP



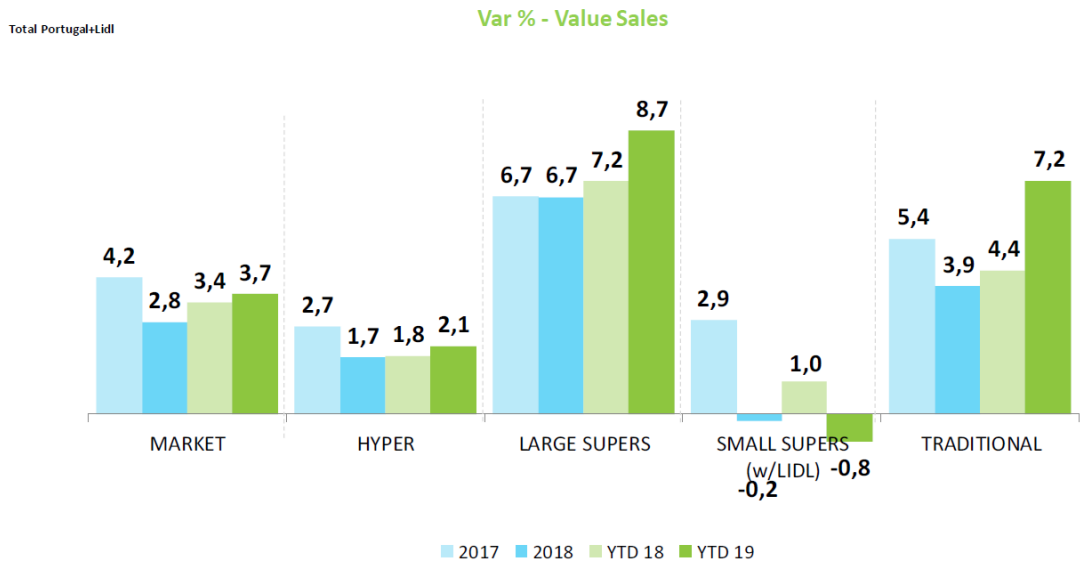
Source: World Bank, 2019

Appendix 3 – Portugal Retail Market structure 2018

Channels	Hypermarkets & Supermarkets						Discounts		
Customers	SONAE	JERÓNIMO MARTINS	Auchan	os Mosqueteiros	E.LECLERC	El Corte Inglés	Carrefour	LIDL	ALDI
Banners	CONTINENTE, CONTINENTE modelo, CONTINENTE bom dia, Meu super	pingo doce	Auchan, My Auchan	Intermarché, Intermarché Contact	E.LECLERC	El Corte Inglés, SUPERCOR	minipreço, DIA, clarel	LIDL	ALDI
Nr of stores*	259	407	55	249	21	8	532	251	64

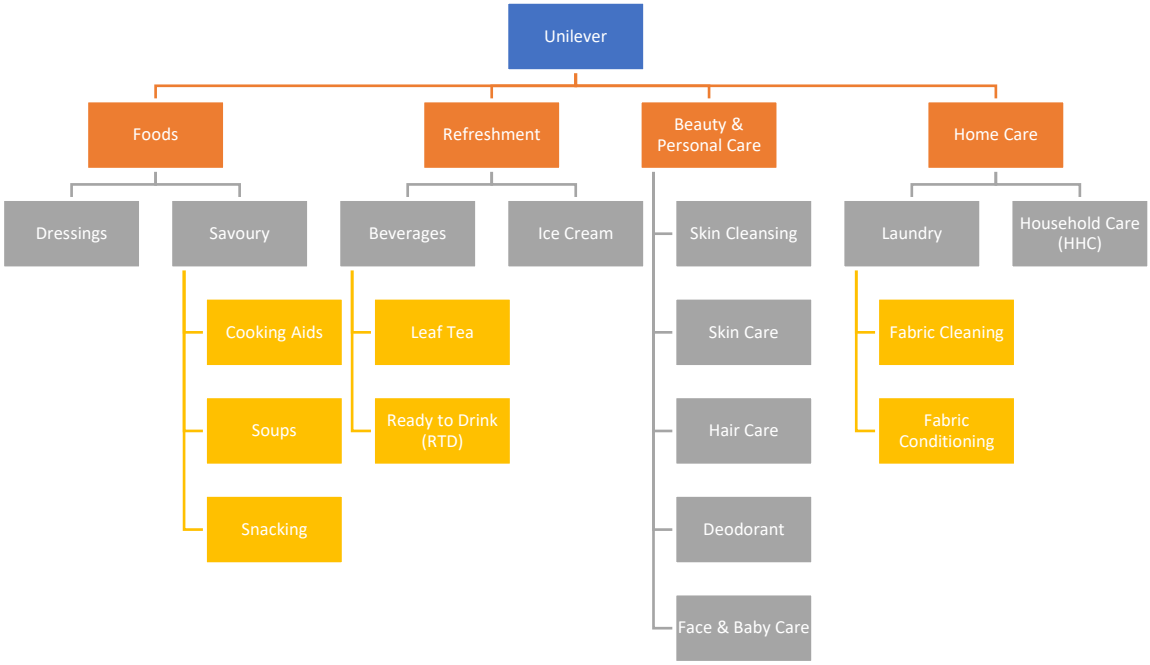
Source: Author based on secondary research (2019); *Nielsen, 2019

Appendix 4 – Variance of Value Sales by Channel



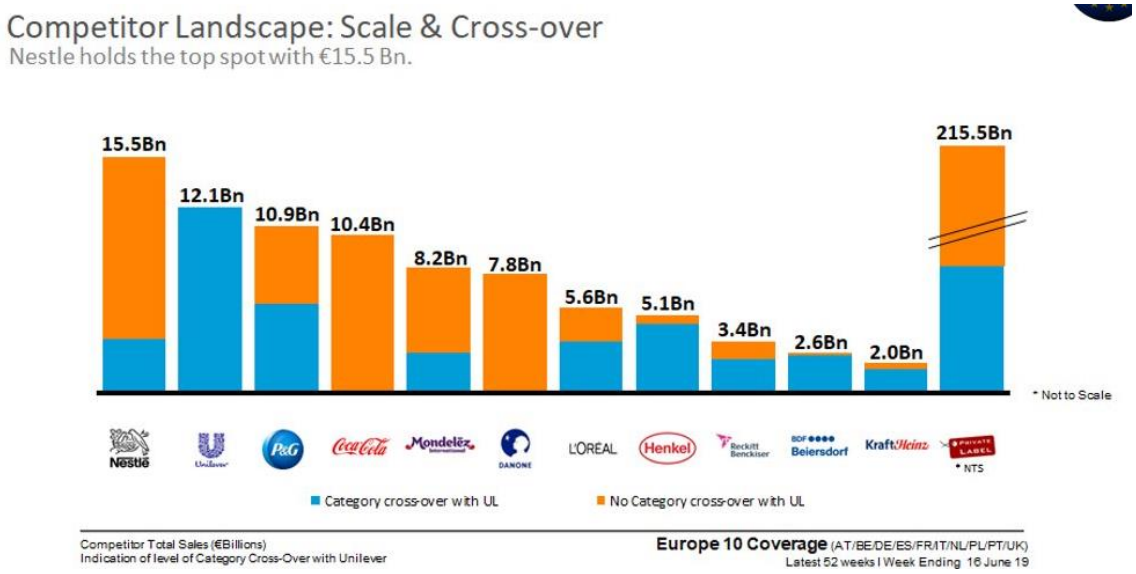
Source: Nielsen, W24 2019

Appendix 5 – Unilever FIMA's operation categories



Source: Author based on secondary research (2019)

Appendix 6 – Europe FMCG's Competitors Landscape

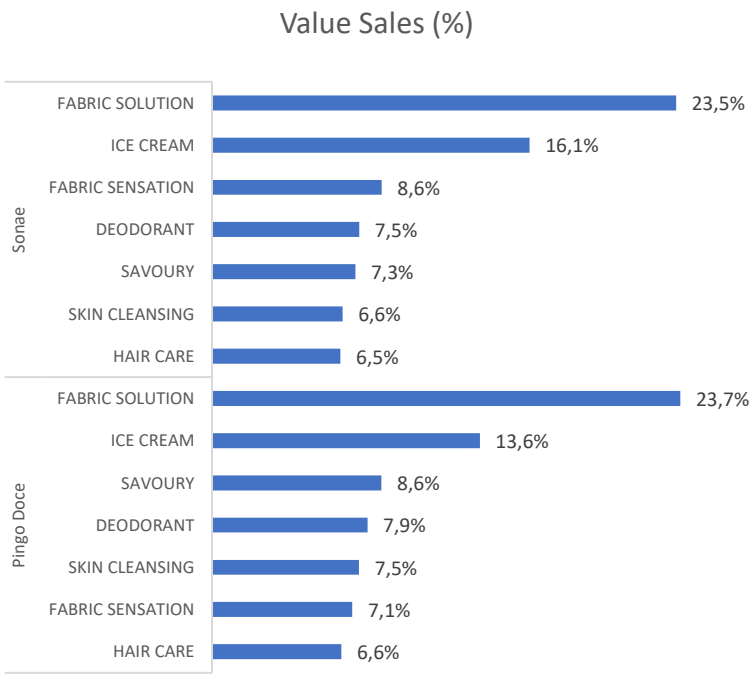


Source: Nielsen, W24 2019

Appendix 7 – Sample of Unilever FIMA's brands by segment

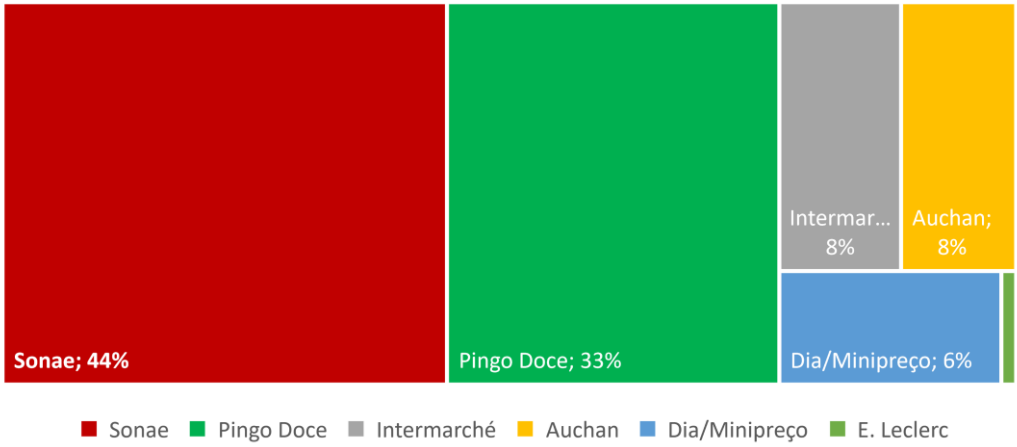
Source: Author based on secondary research (2019)

Appendix 8 – Unilever Value Sales by Category per Retailer



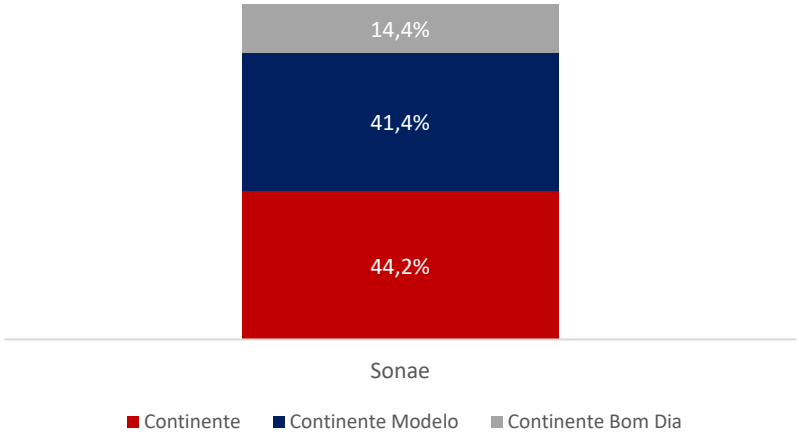
Source: Author based on secondary research (2019); JIT (Full Year 2018)

Appendix 9 – Unilever Value Sales by Retailer in 2018



Source: Author based on secondary research (2019); JIT (Full Year 2018)

Appendix 10 – Weigh of Value Sales for each Sonae's banner



Source: Author based on secondary research (2019); JIT (Full Year 2018)

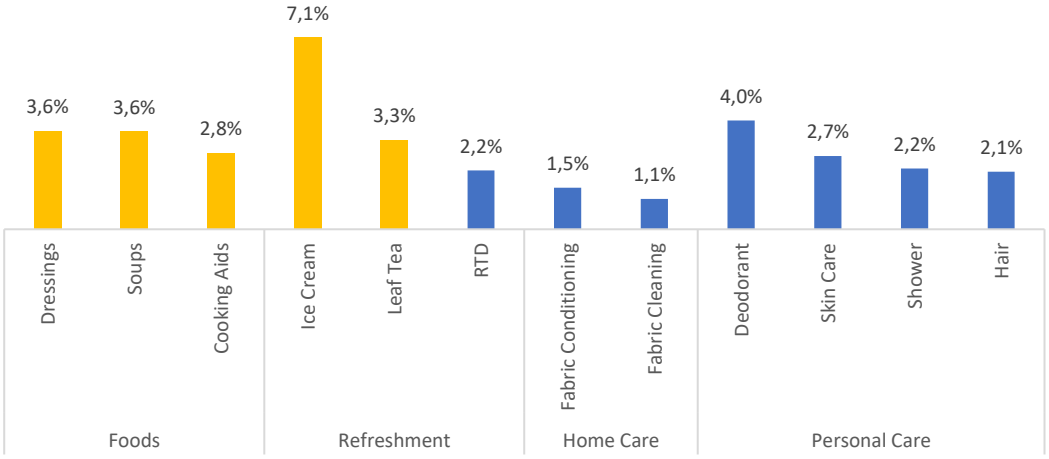
Appendix 11 – List of selected stores with Unilever's sales over €1M

Store Name	Store Code
Continente Matosinhos	L0001
Continente Amadora	L0002
Continente Cascais	L0003
Continente Gaia Shopping	L0004
Continente Leiria	L0005
Continente Coimbra Shopping	L0006
Continente Seixal	L0007
Continente Guimarães	L0008
Continente Colombo	L0009
Continente Maia	L0010
Continente Loures Shopping	L0011
Continente Vasco Da Gama	L0012
Continente Guia	L0013
Continente Antas	L0014
Continente Portimão	L0202

Store Name	Store Code
Continente Viseu	L0203
Continente Vila Real	L0204
Continente Viana Do Castelo	L0209
Continente São João Da Madeira	L0210
Continente Covilhã	L0212
Continente Santarém	L0215
Continente Maia Jardim	L0333
Continente Aveiro	L0458
Continente Braga	L0459
Continente Arrábida	L0460
Continente Sto António Cavaleiros	L0461
Continente Montijo	L0462
Continente Oeiras	L0463
Continente Telheiras	L0464
Continente Fórum Coimbra	L0465

Source: Author based on secondary research (2019); JIT (Full Year 2018)

Appendix 12 – Level of OOS situations per category in 2018



Source: Author based on secondary research (2019); OSA Reports (Full Year 2018)

Appendix 13 – Core of the Core (COTC) Products per category

Big C	Category	COTC Products
Foods	Dressings	
	Cooking Aids	
	Soups	
Refreshment	Ice Cream	
	Leaf Tea	

Source: Author based on secondary research (2019)

Appendix 14 – List of selected SKUs

Foods	
Category	**Product**
Dressings	CALVÉ Ketchup TD 275gr
	CALVÉ Ketchup TD 550gr
	CALVÉ Maionese TD 227gr
	CALVÉ Maionese TD 753gr
	CALVÉ Mostarda TD 206gr
	CALVÉ Whisky Cockt. Vidro 235gr
	CALVÉ Alho Vidro 250gr
	HELLMANN'S Maionese Vidro 416gr
Cooking Aids	KNORR Caldo Arroz 8c
	KNORR Caldo Carne 8c
	KNORR Caldo Culinário 16c
	KNORR Caldo Galinha 8c
	KNORR Caldo Galinha 16c
	KNORR Caldo Galinha 24c
Soups	KNORR Canja Galinha
	KNORR Creme Marisco
	KNORR Sopa Cebola
	KNORR Sopa Económica Cebola
	KNORR Sopa Económica Canja Galinha
	KNORR Sopa Gourmet Cogumelos

Refreshment	
Category	**Product**
Ice Cream	CARTE D'OR Salty Caramel
	CARTE D'OR Stracciatella
	CARTE D'OR Strawberry Merengue
	CORNETTO Classico
	CORNETTO Morango
	MAGNUM After Dinner
	MAGNUM Amendoas
	MAGNUM Mini 3 Chocolates
	MAGNUM Mini Amendoas
	MAGNUM Mini Double Caramel
	PERNA DE PAU Multipack
Leaf Tea	LIPTON Camomila 20 Pyr.
	LIPTON Cidreira 20 Pyr.
	LIPTON Cidreira/Mel 20 Pyr.
	LIPTON Detox 20 Saq.
	LIPTON Digestão Fácil 20 Saq.
	LIPTON Frutos Silvestres 20 Pyr.
	LIPTON Limão Gengibre 20 Pyr.
	LIPTON Noite Tranquila 20 Saq.

Source: Author based on secondary research (2019)