Customer-centricity in a product-centric marketplace:
a bottom-up approach to customer, brand, and category management

ABSTRACT

Marketing researchers have established a trade-off between product-centricity and customer-centricity, while recommending the adoption of the later. However, for managers in the consumer packaged-goods (CPG) industry, product and brand performance management still essential marketing activities. For conciliating it, we propose a framework to integrate customer, product, and brand performance management. An RFM model disaggregated per product category and brand (RFM/PB) is proposed to empirically apply the framework to a distributor-retailer B2B relationship in the CPG industry. The results evidence not only the capacity of integrating customer, product, and brand performance, but allowing levels of analysis of expected values to every intersection between these dimensions that are not possible when they are assessed separately. Additionally, different levels of customer value concentration were observed in each product category and brand, as well as we found high levels of discordance among who are the most valuable customers in each product category and brand.

Keywords: customer management, product management, brand management, RFM model.

1. INTRODUCTION

The consumer packaged-goods (CPG) industry is traditionally product-centric because of, among other reasons, the intrinsic importance of managing and delivering products and brands performance. Brands (and the products they label), through all their functions, end up creating value for customers, generating loyalty and stable cash flows, facilitating effective word-of-mouth, and so on. Brands are built to reverberate in the customers' minds engaging them and supporting customer-centric marketing programs (Kapferer, 2008).

Extant research, however, reinforces the need for companies to adopt a customer-centric perspective and develop marketing programs around customers (Kumar & Shah, 2009). It implies moving towards customer-oriented marketing metrics such as customer lifetime value (CLV) and customer equity (CE) in order to maximize the present net value of the cash flows brought by its customers (Gupta, Lehmann & Stuart, 2004; Kumar & Reinartz, 2016). It also implies the need to replace the traditional product-centric organizational structures by customer-centric structures, which provide greater market knowledge (Lee et al., 2015).

Although the move towards a customer-centric orientation is indeed relevant for businesses, when managers from the CPG industry face the challenge of becoming customer-centric, they find themselves separately managing customers and brands/products performance. Despite the adoption of a customer-centric orientation, they still need to manage, for instance, category strategy, assortment optimization, brand extensions, and the expected cash flows from the brands and the products they offer.

Given that, the first objective of the present research is to propose a theoretical framework for integrating customer, product, and brand performance management. For a CPG player, turning to a customer-centric management by only predicting aggregated present values of expected cash flows for each retailer to achieve their CLVs would be suboptimal. Profitability management would be more attuned with the idiosyncrasies of this setting if such expected cash flows were disaggregated per customer, per product, and per brand. Customers, brands and products are different sides of the same problem: how marketing creates value. So, the results of the management practices applied to increase marketing value may be observed by the cash flows generated by each customer, product, and brand combination.

The second objective of this study is to provide an empirical application of the framework for a large CPG distributor and evidence the benefits of adopting such method. For estimating the expected cash flows, we adopted the disaggregated recency, frequency and monetary model (RFM) (Fader; Hardie & Lee, 2005). Even though the framework may be applied to different types of relationship along the supply chain in the CPG setting, we focused on the specific business-to-business (B2B) relationship between distributors and retailers. While adopting a customer-centric orientation, distributors would certainly benefit by using metrics such as retailers' CLV and CE. However, products and brands are the main "touchpoints" a distributor has with its end-customers and it drives end-customers purchases. In CPG setting, it is important for distributors to estimate retailer's CLV, however, such analysis would be incomplete if the distributor does not know which products and brands drives such CLV.

2. CUSTOMER CENTRICITY

Customers, managed as a company's asset through the concept originally defined by John Deighton as customer equity (CE) have received central focus especially since the 1990s (Blattberg, Getz & Thomas, 2001). Thus, customers have become the main priority of marketing efforts (Gupta et al., 2004). Kumar and Shah (2009) go even further stating that the world has become customer-centric, once firms are increasingly aligning their organizations

around customers. Lee et al. (2015) also concluded that, in terms of organizational structure, a customer-centric one is the recommended choice.

The concept CE is by definition related to the concept of customer lifetime value (CLV). CLV is the present value of the sum of the estimated cash flows that are expected to be provided by a customer or a customer segment during the time it is expected to maintain relationship with a given company (Villanueva & Hanssens, 2007). In turn, for Kumar and Shah (2009) and Villanueva and Hanssens (2007), the sum of lifetime values of all customers of the firm represents the CE of the firm. Therefore, CLV is a measure of customer individual profitability, and CE is an aggregate measure of customer base profitability (Kumar & Shah, 2009; Kumar & Reinartz, 2016).

Thus, the CE paradigm recognizes customers as the main source of current and future cash flows of an organization (Villanueva & Hanssens, 2007). Consequently, the firm should be interested in maximizing the present net value of the cash flows brought by its customers (Gupta et al., 2004; Kumar & Reinartz, 2016).

3. BRANDS AND PRODUCTS RELEVANCE FOR CPG INDUSTRY

The consumer packaged goods (CPG) industry is traditionally product-centric because of, among other reasons, the intrinsic importance of managing and delivering products and brands performance. Extant research have explored the myriad of relevant decisions concerning product and brand management within such industry. Yonezawa and Richards (2016) examined the implications of package-size changes. Sorescu and Spanjol (2008) studied the effect of breakthrough and incremental product innovation on firm value in the CPG industry. Mantrala et al. (2009) proposed a product assortment planning model for retailers to make decisions such as the variety of merchandise, the depth of merchandise, and the amount of inventory to allocate to each stock-keeping unit (SKU). In turn, Moorman et al. (2012) analyzed how public firms in the CPG industry influence their stock market valuations by timing the introduction of innovative new products. Bronnenberg, Dhar, and Dubé (2007) and Ataman, Mela, and Van Heerde (2007) identified that geographic variation is the predominant source of variation in national brand market shares. Likewise, many other studies have focused either on brand or product management in the CPG industry.

Even though companies from such industry may benefit from adopting a customer-centric orientation, it does not mean that they have to abandon brand and product management activities. Indeed, Kapferer (2008) states that brands are built to reverberate in the customers' minds, engaging them and supporting customer-centric marketing programs. Given this

rationale, Kapferer (2008) questions: What is customer equity without brand equity? Although customer-centricity has been proven to be relevant to drive firm performance (Kumar & Shah, 2009; Kumar & Reinartz, 2016), Kapferer's (2008) argument remains valid once brand and product management still relevant for companies' success, especially in the CPG industry.

Concerning product management, companies are supposed to invest in research and development to create products to better meet customers' needs. The purpose of those practices is to create value for the customer and keep companies' offers competitive over time. Additionally, marketing managers have to monitor the performance of each product or product category it keeps in the market. Not only a strong brand is enough to drive products success. In order to accomplish it, decisions such as quality standards, design, features, and packaging have to be made (Kotler & Keller, 2012). If they are not able to provided perceived value for customers, it will not be economically viable.

Consequently, when we analyze customers, products or brands, we are actually dealing with different perspectives of the same problem: how marketing creates value. Kumar and Reinartz (2016), affirm that business is about creating value and the purpose of a sustainable business is, first, to create value for customers and, second, to extract some of that customer value in the form of profit, thereby creating value for the firm. In this sense, in order to be successful, CPG firms have to create or co-create (Vargo & Lusch, 2004) perceived value for/with customers through developing products and brands. Second, customers provide value (customer lifetime value) for the organization (Gupta & Lehmann, 2006; Kumar & Reinartz, 2016). Therefore, a CPG firm needs to consider both sides while allocating its resources.

When this resource allocation is successfully accomplished, there is an increase in perceived value from customers. Therefore, customer acquisition rates are expected to be higher and customers are expected (1) to have more favorable behavior toward the brands and products; (2) to have higher retention rates, and (3) to spend more with the companies' branded products. Therefore, it contributes to increase in brands and products performances. On the other hand, it also contributes to increase in individual-level CLV and, consequently, in CE.

In the widest sense, the creation of customer perceived value by the company or even by the customer – in co-creation scenarios (Vargo & Lusch, 2004) – is expected to generate positive customer behavior toward the company's offerings and, ultimately, to bring present and expected future cash flow to the company. Such cash flow is only one and may be analyzed from customer, brand or product perspectives. However, these perspectives are usually addressed separately in the literature while they should be jointly taken into account when

managing marketing profitability (Keiningham et al., 2005; Leone et al., 2006; Romero & Yagüe, 2015).

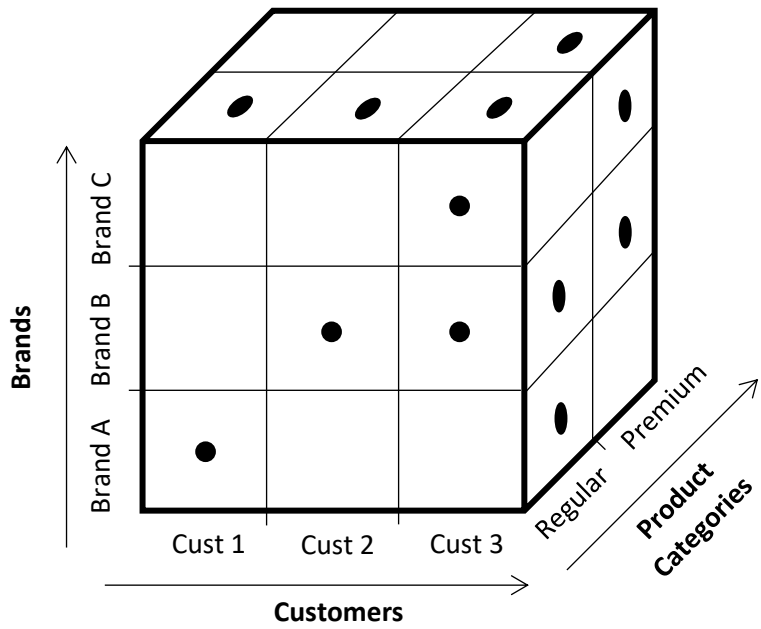
For Leone et al. (2006) there is no question that customer equity and brand equity (and product performance) are related. In theory, both approaches can be expanded to incorporate the other point of view, and they are clearly inextricably linked. Especially in the CPG setting, customers drive the success of brands and products, but they, in turn, are the necessary touchpoints that firms have to connect with their customers.

Ambler et al. (2002) state that firms should think of brand and customer assets as two sides of the same coin and, therefore, they should expand their focus to manage both brand and customer portfolios. Ambler (2003) even emphasize that brands and customers just present different perspectives of the same intangible asset since the financial worth in both cases is estimated by taking the net present values of the same future cash flows. If we include products (or product categories), which is so important for CPG firms, the statement of Ambler et al. (2002) could have an even wider sense if it was updated. One possible way of doing it could be: CPG firms should think of customer, product, and brand as three faces of the same cube and, therefore, they should expand their focus to jointly manage brand, customer and product portfolios.

It represents a disaggregated estimation of the present value of expected cash flows for each intersection between brands, products (or product categories), and customers. Each face of the cube represents the total market value created by a given company, based on forward looking measures of future cash flows. Therefore. it originates the Customer, Product, and Brand Framework (hereafter CPB framework) that we proposed in the present research (see Figure 1). Each black dot in Figure 1 represents the intersections with expected present values greater than 0. Thus, managers may consider the same forward-looking measures for analyzing the performance of each customer, product, and brand combination or they may choose the desired aggregation direction to assess any upper level of aggregation among customers, brands, and products.

Given that brands, customers, and products are interconnected around the same business objective (value creation), instead of managing customers (customer-centric) and brands/ products (product-centric) separately, a holistic perspective may be adopted. It also solves the issue of having different overall results when predicting expected customer, product, and brand cash flows separately. Hence, by using only one framework of analysis, managers are able to reach a range of analysis and decisions attuned with the idiosyncrasies of the CPG setting.

Figure 1: Conceptual CPB Framework



4. METHOD

In this section, we describe the distributor and its data, which was used in the empirical application of the CPB framework, and we present the model to estimate the disaggregated cash flows between every existing combination between customers, brands, and products: Beta Geometric/Negative Binomial Distribution (BG/NBD) model per brand and per product.

4.1. DATA

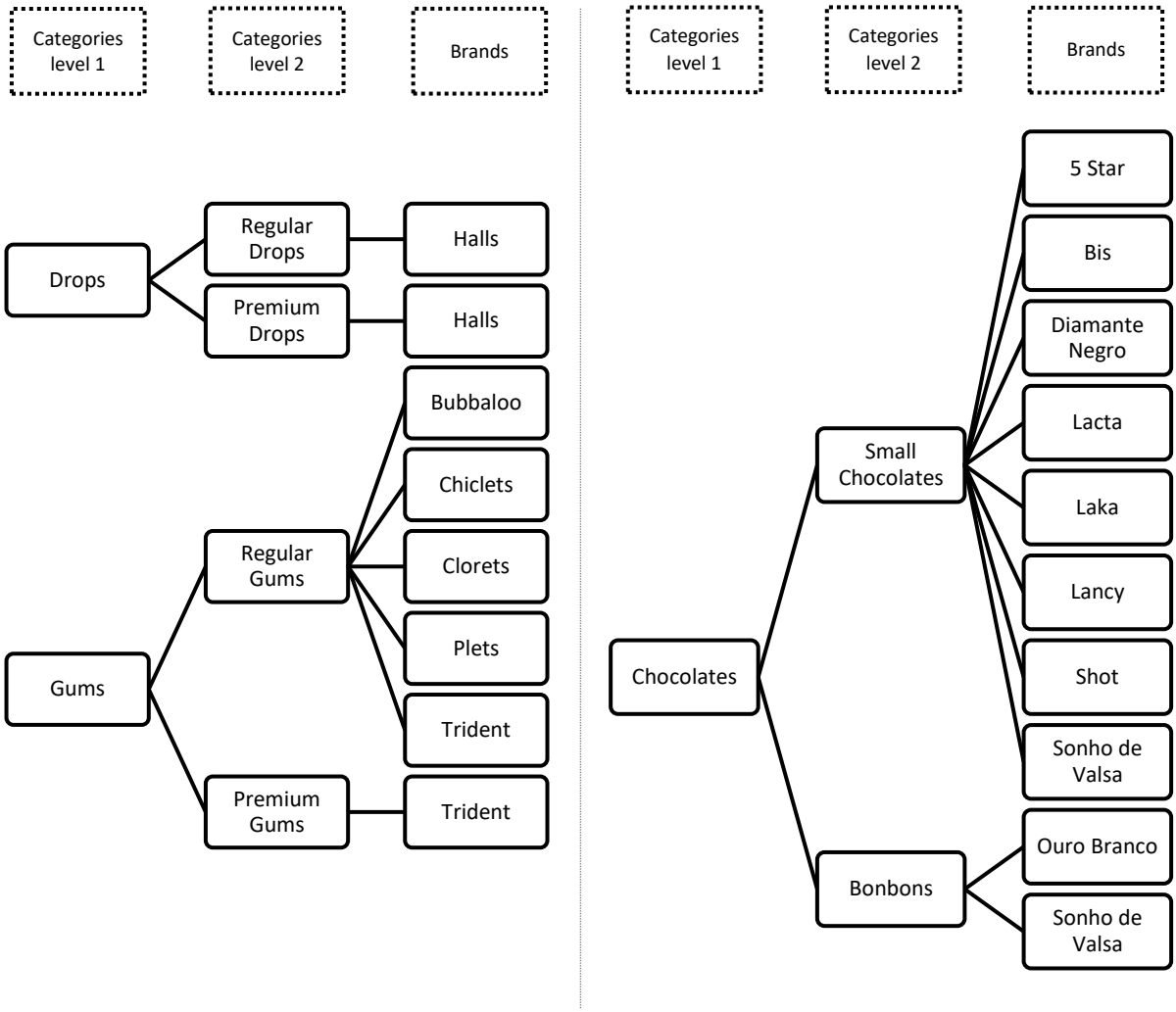
Regarding data necessary to build the proposed CPB framework, for B2B relationships, every company already has enough data available. It should only contain the following transaction variables: customer (retailer) id, transaction date, purchased product, purchased brand, and purchased product contribution margin.

Given the lack of research addressing customer, product, and brand forward looking profitability measures for B2B relationships in CPG settings, in our empirical application of the CPB framework, we addressed the B2B relationship between a distributor of chocolates, gums, and drops and the retailers it sells to, treated as the customers analyzed. The dataset contains 60 months, from January 2013 to December 2017, with every purchase from a cohort of 5974 retailers. The retailers are small and medium size stores operating in Brazil, such as groceries, drugstores, restaurants, convenience stores, etc.

In Figure 2, we present the 18 existing combinations of product categories level 2 and brands for the customers to purchase. Most brands label products only from one product

category such as 5 Stars and Ouro Branco, whereas other brands label products from two product categories such as Sonho de Valsa and Trident.

Figure 2 – Possible product category and brand combinations



4.2. ESTIMATING CPB FRAMEWORK - RFM/PB DISAGGREGATED MODEL

The estimation of the CPB framework future cash flows implies performing a disaggregated cash flow estimation for every existing intersection between customers, brands, and products (or product categories). In order to accomplish it, we propose an RFM model disaggregated per product and brand (hereafter RFM/PB). For estimating it, a BG/NBD model, as developed by Fader et al. (2005), should be adjusted for each existing product and brand combination, allowing the estimation of expected cash flows for every customer, product, and brand combination.

Given the non-contractual setting and the availability of the full transaction log of every customer in the dataset used, the BG/NBD is an adequate method. The BG/NBD model is also preferred, because such stochastic model have been proven to perform quite well to estimate customer repeated purchases, it is easily applicable to large datasets, and it does not depend on

using covariates for it to be estimated, once it relies only on the following variables: customer purchase recency, customer purchase frequency, and customer contribution margin per purchase.

Therefore, by using the disaggregated BG/NBD model per product and brand combination, it is possible to estimate the proposed CPB framework. In order to accomplish it, the disaggregated estimation of customer values per product (or product category) and brand combination ($E(CV_{pb})$), assuming that the product and brand combinations are independent of each other, is defined as

$$E(CV_{pb}) = E[m_{pb}] \int_0^{\infty} E[z_{pb}(t)]\, S_{pb}(t)\, d(t), \tag{1}$$

where $E[m_{pb}]$ is the expected contribution margin per product p and brand b, $E[z_{pb}(t)]$ is the expected number of purchases per product p and brand b in period t, $S_{pb}(t)$ is the survivor function that defines the probability of the customer buying product p and brand b in period t, and $d(t)$ is the discount factor that reflects the present value of money in period t.

Based on Fader et al. (2005b), the BG/NBD model used to estimate the expected number of transactions in a future period of length t for a customer with past observed behavior ($X_{pb} = x_{pb}, tx_{pb}, T_{pb}$) for product p and brand b is:

$$E(Y_{pb}(t)|X_{pb} = x_{pb}, tx_{pb}, T_{pb}, r_{pb}, \alpha_{pb}, a_{pb}, b_{pb}) = \frac{a_{pb} + b_{pb} + x_{pb} - 1}{a_{pb} - 1} \times \frac{\left[1 - \left(\frac{\alpha_{pb}+T_{pb}}{\alpha_{pb}+T_{pb}+t}\right)^{r_{pb}+x_{pb}} {}_2F_1\left(r_{pb}+x_{pb}, b_{pb}+x_{pb}; a_{pb}+b_{pb}+x_{pb}-1; \frac{t}{\alpha_{pb}+T_{pb}+t}\right)\right]}{1+\delta_{x_p>0}\frac{a_{pb}}{b_{pb}+x_{pb}-1}\left(\frac{\alpha_{pb}+T_{pb}}{\alpha_{pb}+tx_{pb}}\right)^{r_{pb}+x_{pb}}}, \tag{2}$$

where $r_{pb}, \alpha_{pb}, a_{pb}, b_{pb}$ are BG/NBD parameters per product p and brand b, X_{pb} represents the purchase history (x_{pb}, tx_{pb}, T_{pb}) per product p and brand b, x_{pb} is the number of transactions, tx_{pb} is the time of the last transaction (recency), T_{pb} is the length of the calibration time period, and ${}_2F_1(\cdot)$ is the Gaussian hypergeometric function.

In turn, in order to estimate the expected contribution margin per transaction, per product p and per brand b, $E[m_{pb}]$, we followed Fader et al. (2005a), which defined that the expected contribution margin per transaction follows a gamma-gamma distribution, resulting in a weighted average between the population mean, $\frac{\gamma_{pb}\nu_{pb}}{q_{pb}-1}$, and the customer transaction value mean per product and per brand, mx_{pb}:

$$E[M_{pb}|\nu_{pb}, q_{pb}, \gamma_{pb}, mx_{pb}, x_{pb}] = \left(\frac{q_{pb}-1}{\nu_{pb}x_{pb}+q_{pb}-1}\right)\frac{\gamma_{pb}\nu_{pb}}{q_{pb}-1} + \left(\frac{\nu_{pb}\gamma_{pb}}{\nu_{pb}x_{pb}+q_{pb}-1}\right) mx_{pb}, \tag{3}$$

where $\nu_{pb}, q_{pb}, \gamma_{pb}$ are parameters of the transaction value model per product p and brand b, x_{pb} is the number of transactions per product p and brand b, and mx_{pb} is the observed average customer transaction value per product p and brand b. Thus, the weighted average is obtained from the product and brand average transaction value and customer average purchase amount of that product and brand.

Given the estimation of the expected cash flows for every existing disaggregated customer, product and brand value combination, the cells of the conceptual cube proposed in Figure 1 are fulfilled. Once all the disaggregated cash flows are known, one may take advantage of using the proposed CPB framework and conduct a bottom-up summation of each possible higher levels of aggregation: (1) customer values are obtained by summing up the disaggregated values across brands and products; (2) brand values are obtained by summing up the disaggregated values across customers and products; (3) product values are obtained by summing up the disaggregated values across customers and brands; (4) the aggregated values of every customer and brand combination is obtained by summing up the disaggregated values across products; (5) the aggregated values of every customer and product combination is obtained by summing up the disaggregated values across brands; (6) the aggregated values of every brand and product combination is obtained by summing up the disaggregated values across customers; (7) the overall aggregated value generate by the company is obtained by summing up the disaggregated values across customers, brands, and products.

5 RESULTS

In this section, we present the results for the analyses conducted based on the proposed CPB framework for a B2B distributor-retailer relationship in the CPG industry and elucidate why using the CPB framework should be preferred instead of analyzing customer, products, and brands separately. Firstly, we present the results for the disaggregated RFM/PB, including parameters estimated and prediction accuracy measures. Then, the disaggregated values estimated for each customer, product, brand combination are presented. Finally, we analyze customer ranking discordances among the customer, product, and brand existing combinations as well as Pareto distributions of the customer cash flows for brands and product categories.

5.1 RFM/PB DISAGGREGATED MODEL ESTIMATION

In Table 1, the results of every BG/NBD models parameters (r, α, a, and b) and log likelihoods estimated for every existing combination among customer, product, and brand are

presented. The results for the traditional RFM aggregated model Fader et al. (2005b), used as benchmark model, are also presented.

Table 1 – Model estimation by RFM/PB using BG/NBD model

Model	Product Category	Brand	*r*	*α*	*a*	*b*	Log-likelihood
RFM/PB (disaggregated)	Regular Drop	Halls	0.851	1.504	0.136	3.751	-145,309
	Premium Drop	Halls	0.753	1.853	0.438	10.772	-98,016
	Regular Gum	Bubbaloo	0.785	1.866	0.185	4.684	-104,248
	Regular Gum	Chiclets	0.549	1.540	0.543	4.633	-72,664
	Regular Gum	Clorets	0.667	2.144	0.163	4.941	-72,752
	Regular Gum	Plets	0.710	1.603	0.303	7.111	-103,262
	Regular Gum	Trident	0.879	1.272	0.163	4.912	-159,940
	Premium Drop	Trident	0.800	1.364	0.203	5.828	-137,786
	Small Chocolate	5 Star	1.481	3.066	0.001	549.427	-25,137
	Small Chocolate	Bis	1.297	2.168	0.349	7.271	-77,963
	Small Chocolate	Diamante Negro	0.889	3.558	0.459	12.736	-64,981
	Small Chocolate	Lacta	0.581	3.770	1.187	16.714	-27,170
	Small Chocolate	Laka	0.818	2.768	0.425	11.035	-66,274
	Small Chocolate	Lancy	0.555	3.489	1.168	7.694	-13,856
	Small Chocolate	Shot	0.655	2.858	1.415	30.330	-47,051
	Small Chocolate	Sonho de Valsa	0.655	5.940	0.156	1.626	-9,658
	Bonbon	Ouro Branco	0.729	2.262	0.288	7.561	-76,371
	Bonbon	Sonho de Valsa	0.785	3.522	0.589	22.746	-57,323
RFM (aggregated)	-	-	1.004	1.028	0.145	4.388	-181,760

Once the BG/NBD models are estimated, we can predict the expected value of every level of aggregation among customers, products, and brands. The prediction accuracy evaluation for each of these levels of aggregation is presented in Table 2.

The total predicted value is 16.1% lower than the total actual value. Regarding the individual level accuracy metrics for each level of value aggregation, they differ considerably from one level of aggregation to another, because some levels are more fragmented than others, so the average value of each level of aggregation is quite different. The individual level metrics resulted in acceptable error levels. The correlations measures evidence good results for both pairwise and rank correlation among predicted and actual individual level values.

Additionally, in order to compare the results with a benchmark model, we have compared the results only for the customer level of aggregation using the RFM/PB disaggregated model and the traditional RFM aggregated model as proposed by Fader et al. (2005b). The results of the traditional RFM aggregated model are: MAE = $ 630.48; MDAE = $ 121.45; RMSE = $ 1741.36; Pearson correlation = 0.84; Spearman correlation = 0.87; Percentage of deviation from total actual value = -28,0%. As it is presented in Table 3, the results of the RFM/PB disaggregated model are: MAE = $ 566.51; MDAE = $ 119.17; RMSE = $ 1,565.37; Pearson correlation = 0.86; Spearman correlation = 0.88; Percentage of deviation from total actual value = -16.1%. By comparing these results for the customer level of

aggregation, we concluded that all the accuracy measures are better when using the RFM/PB disaggregated model. This result indicates that the precision of the disaggregated predictions is at an acceptable level.

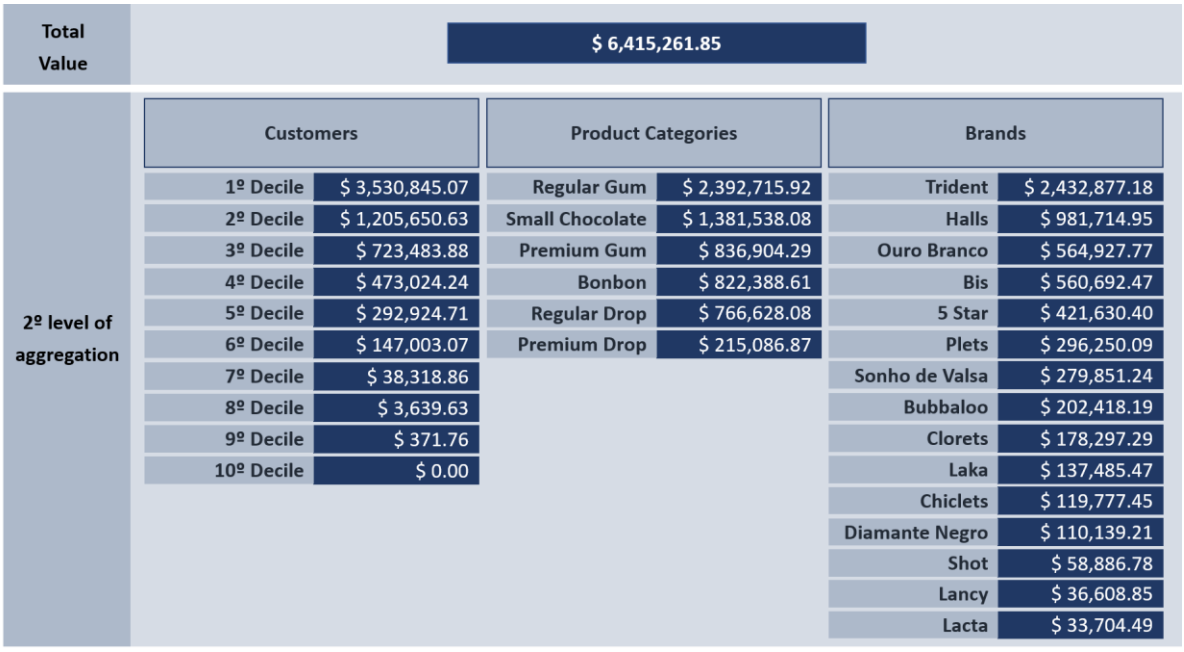
Table 2 - Evaluation of value predictions by RFM/PB using BG/NBD model

		Individual level				Individual ordering	Total value
Level of aggregation	**Average value**	**MAE**	**MDAE**	**RMSE**	**Pearson Corr.**	**Spearman Corr.**	**% deviation**
Customer/ brand/ product	$ 59.66	$ 46.00	$ 0.93	$ 225.94	0.75	0.74	-16.1
Customer/ brand	$ 71.60	$ 51.25	$ 1.31	$ 265.49	0.79	0.74	-16.1
Customer/ product	$ 178.98	$ 124.58	$ 14.37	$ 465.83	0.78	0.82	-16.1
Brand/ product	$ 356,403.40	$ 120,381.95	$ 42,625.02	$ 254,534.33	0.96	0.97	-16.1
Customer	$ 1,073.86	$ 566.51	$ 119.17	$ 1,565.37	0.86	0.88	-16.1
Brand	$ 427,684.10	$ 126,228.32	$ 44,822.43	$ 248,678.48	0.99	0.97	-16.1
Product	$ 1,069,210.00	$ 356,897.79	$ 237,866.80	$ 531,435.32	0.94	0.60	-16.1

5.2 ANALYSIS OF CPB FRAMEWORK EXPECTED VALUES

The underlying objective of using the CPB framework is to integrate customer performance management (customer-centric) and product and brand performance management (product-centric), since they are different facets of the same business goal: value creation. Additionally, managers usually assess the expected value of such facets separately and end up having different overall values for each one. By using the CPB framework, the total cash flow generated is only one and may be aggregated from distinct perspectives. Therefore, by adopting a holistic perspective, it is possible to integrate customer, product, and brand performance management. Especially in the CPG industry, the use of such holistic framework is of great value, because of the intrinsic relevance of managing products and brands in this context.

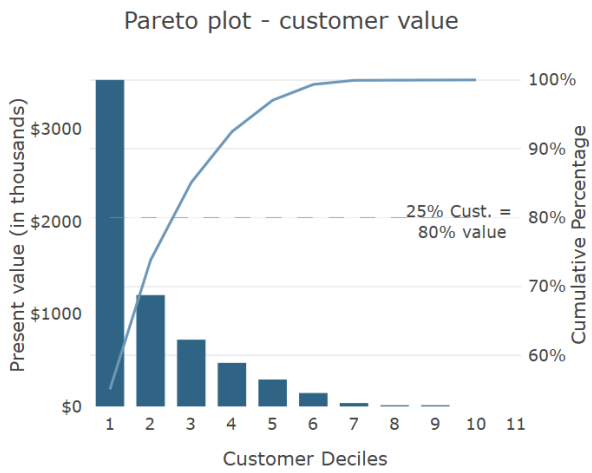
Figure 3 – Total value disaggregated into customers, product categories, or brands values



In Figure 3, we present the overall picture of how the performance management may be assessed through a coherent disaggregation of expected values for every existing customer, product category, and brand. It is coherent, because the sum of values inside each of these three possible second level of aggregation (customer, product category, and brand) add up to the same total value. Even though several analyses could be conducted over such result, in the following, we present some of the main possible conclusions from it.

By analyzing customer performance, one can easily identify how the majority of expected value is concentrated within the first two deciles. In order to be more precise, we analyzed the pareto distribution of customer values (see Figure 4). The results show that 25% of the customers represent 80% of the total value. From here, all the body of knowledge accumulated in the customer management literature could be applied just as it is conducted when traditional CLV models are used.

Figure 4 – Pareto plot using the customer values



In turn, the expected value of product categories is less concentrated. Regular gum and small chocolate are the categories with highest value. However, premium gum, regular drop, and bonbon also represent a relevant percentage of the overall expected value.

Finally, the analysis of the expected values of all brands reveal how, within the geographic area covered by the distributor, Trident is by far the most valuable one, followed by Halls, which also have a higher value compared to the remaining brands. Another interesting and positive result for the company is that several brands have a reasonable contribution to the total value, which suggests that it has been worth offering them.

Although the results of Figure 3 bring an interesting overall assessment of customers, product categories, and brands, by adopting such holistic perspective provided by the CPB framework, it is possible to go further on the assessment of expected values. In Figure 5, we present a heatmap with the customer deciles mean values per product and brand. Such type of

analysis is not achieved when we use separated methods to estimate the expected values of customers, products, and brands.

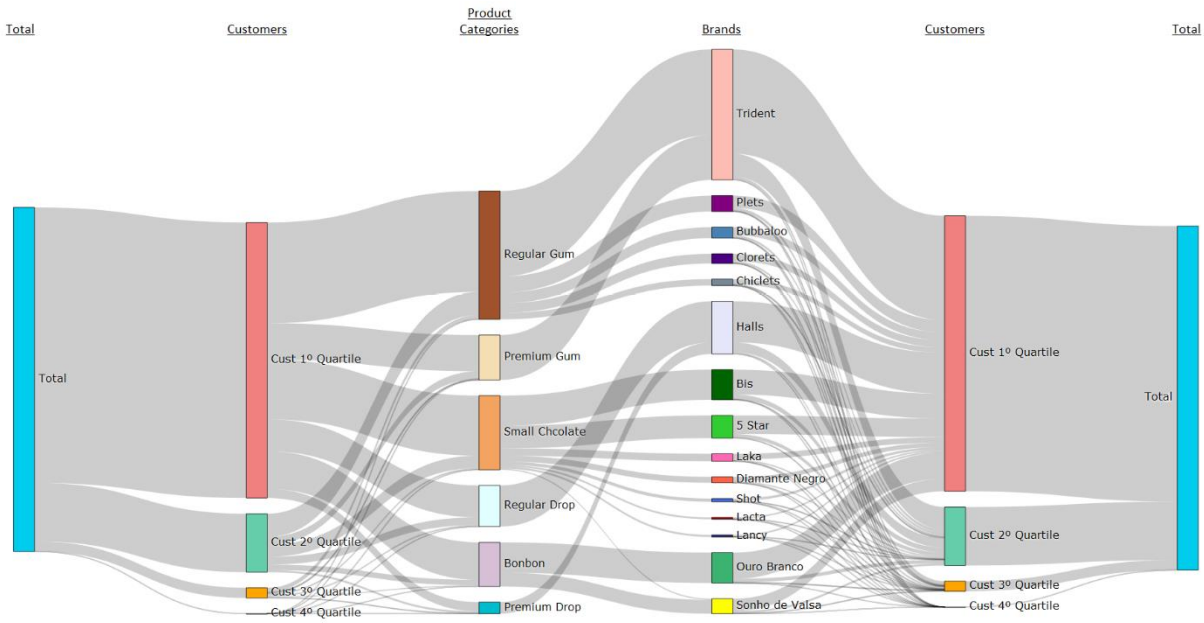
It shows, for instance, how Trident (Trid), the most valuable brand, has a higher mean value in regular gum category than in premium gum along all customer deciles. It is also relevant to conclude that despite not being among the most valuable product categories on Figure 3, bonbon and regular gum categories have relatively high mean values along customer deciles in Figure 5. It may indicate that these categories could be more explored by the company, once they generate higher average values. Additionally, within the bonbon category, Ouro Branco (OB) has mean values along customer deciles of around twice the mean values of Sonho de Valsa (SV). Finally, among small chocolate brands, we identify that Bis and 5 Star are the brands that have the highest mean values.

Figure 5 - Heatmap of customer deciles mean value per product and brand

Customer management research on customer lifetime value and customer equity most of the times addresses only the paths between the total value and customer value. The intersections between customers and products, customers and brands, and products and brands have not received much focus in the literature. However, especially for companies in the CPG industry, they should be considered. Then, by using the results from the CPB framework presented in Figure 6, managers that want to go customer-centric in contexts in which dealing with product categories and brands is essential do not need to face the dilemma of having to make a trade-off between customer-centricity and product-centricity. They may set the organizational structure around customers while not losing sight of product and brand

performance. Indeed, product and brand performance management will be fully integrated into the customer-centric perspective. In Figure 6, the size of the rectangles indicates the value of the respective dimension represented, while width of the paths between the rectangles indicates the value of the intersection among the dimensions. Therefore, it provides a full representation of the CBP framework.

Figure 6 – CPB framework representing the value customers, brands, and products at the different levels of aggregation



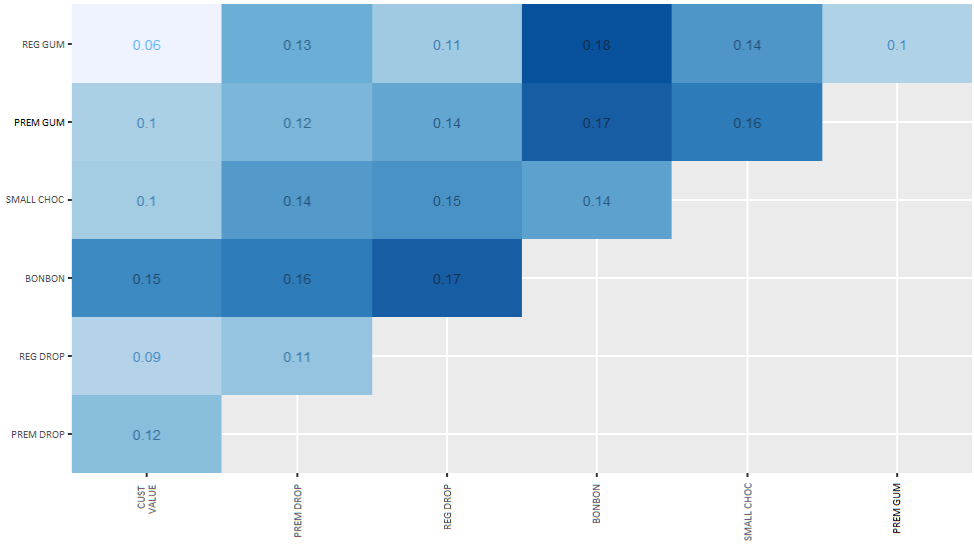
5.3 DIFFERENCE IN VALUES AMONG PRODUCT CATEGORIES AND BRANDS

Based on the results presented in the last section, the CPB framework allows managers to assess the expected values of customers, products, and brands in an integrated and coherent manner, which is not possible if separated estimations were conducted for each of these dimensions. However, besides the gains in performance management aforementioned, we also analyzed whether considering the disaggregated value of each customer per product and brand combination provides additional insights for driving marketing efforts that are not reached when traditional CLV models are used to estimate aggregated customer values. In order to accomplish it, we studied (1) whether there are discordances regarding who are the most valuable customers when considering the overall customer values and the values disaggregated per product categories and brands; and (2) whether the result presented in Figure 3, that 25% of the customers represent 80% of the total value, is maintained when we analyze the percentage of customers that represent 80% of the values disaggregated per product category and brand.

In order to identify whether there are discordances regarding who are the most valuable customers when considering the overall customer values and the values disaggregated per

product categories and brands, we ordered customers from the most valuable one to the least valuable one in the following levels of aggregations: customer, each product category, and each brand. After, we labeled as “the most valuable customers”, those which their values for the given level of aggregations analyzed summed up to 80% of the total value of this particular level of aggregation. The other customers were labeled as “out of the group of the most valuable customers”. Finally, we conducted pairwise counting between the levels of aggregation to compare which was the percentage of discordance regarding who were the most valuable customers in each of the pairs analyzed. The results for the percentage of discordances among every pair of product categories and customer value level are presented in Figure 7, whereas the percentage of discordances among every pair of brand and customer value level are presented in Figure 8.

Figure 7 – Pairwise discordance among most valuable customers - product categories and customer value



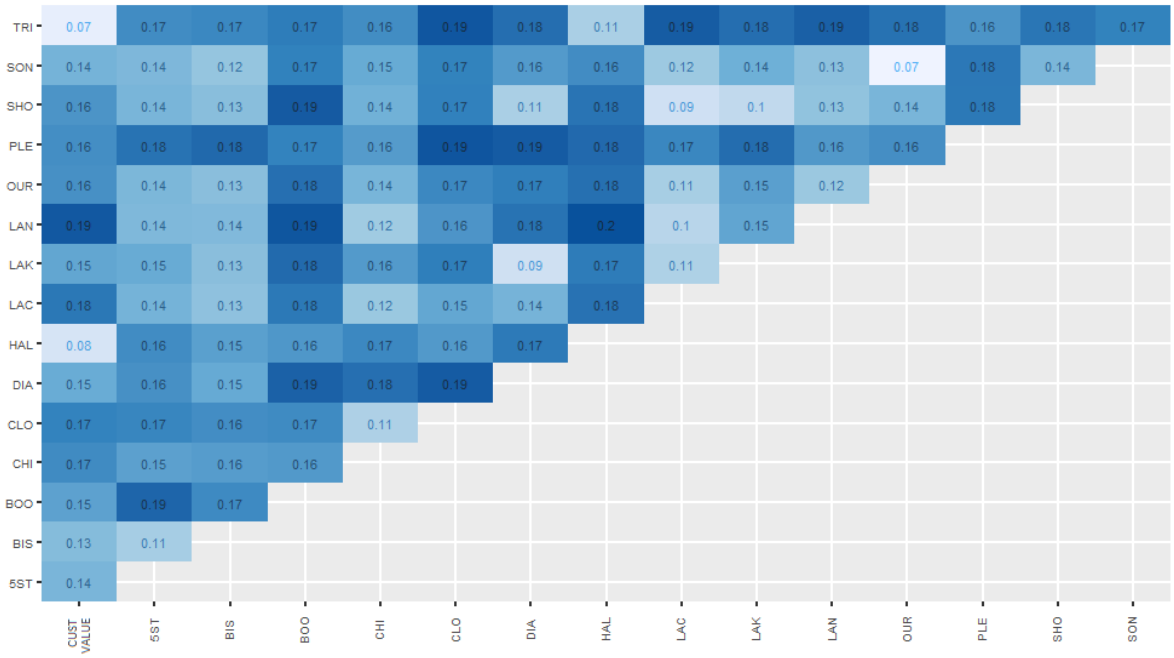
According to Figure 7, there are cases in which up to 18% of the most valuable customer are different between product categories. For instance, 18% of the most valuable customers of

the bonbon category are different from the most valuable customers of the regular gum category. Likewise, 16% percent of the most valuable customers of the small chocolate category are different from the most valuable customers of the premium gum category. Additionally, when compared to the overall customer value level, which is the traditional customer lifetime value analyzed in customer management literature, we can also find that there are discordances among the customers which have higher overall values and the most valuables ones in every product category.

Similar results were also observed when the brands are compared. Based on Figure 8, for instance, 19% of the most valuable customer of the Trident brand are different from the

most valuable customer of the Clorets brand. Additionally, when compared to the overall customer value level, we could also observe discordances among the customers which have higher overall values and the most valuables ones in every brand.

Figure 8 – Pairwise discordance among most valuable customers - brands and customer value

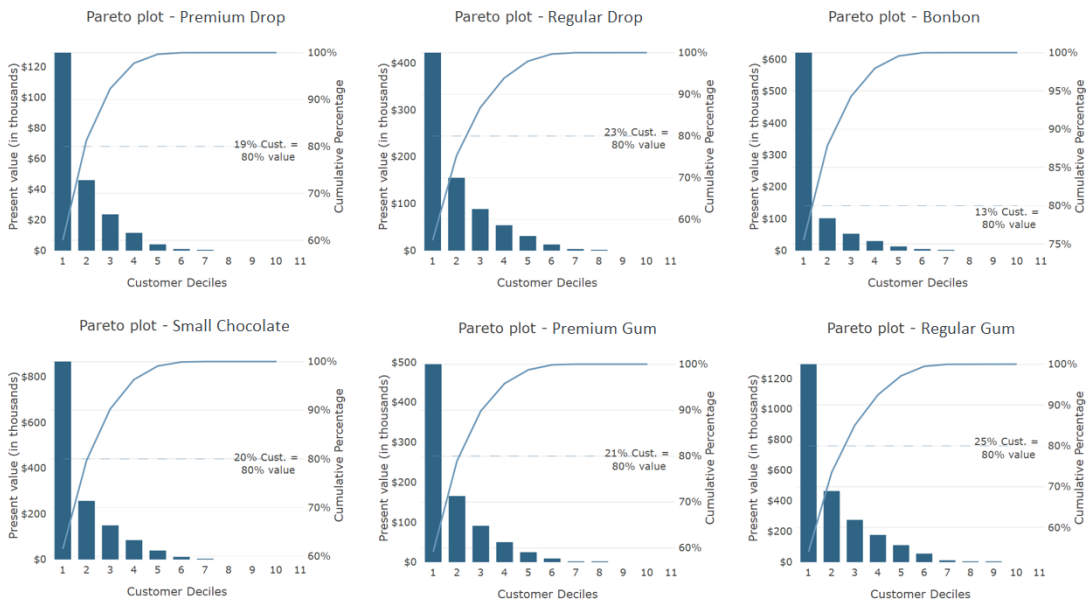


The identification of such discordances highlights that when we analyze customer disaggregated by product category and brand, we discover valuable information which is not available when we analyze only aggregated customer lifetime values. In the case of the high discordance between Trident and Clorets, for instance, given that both are gum brands, it means that there are opportunities for salespeople to understand why some customers are not expected to purchase as much Trident gum as they likely to purchase Clorets gums and vice-versa. It will lead to more precise cross-selling efforts.

Finally, in order to better understand what kind of novel information is provided by using the CPB framework, we have also analyzed whether the pareto distribution observed for the overall customer values holds when we analyze the percentage of customers that represent 80% of the values disaggregated per product category and brand. In Figure 3, we identified that 25% of the customers represent 80% of the total value. However, if we observe the results of the same analysis for the product categories (Figure 9) and for the brands (Figure 10), we observe that it differs considerable from one case to another.

While bonbon category has a higher concentration of value, 13% of the customers represent 80% of the value of this product category, regular drop and regular gum are less concentrated and have similar results to that of the overall customer value, 23% and 25%, respectively, of the customers represent 80% of the value of these product categories.

Figure 9 - Pareto plots using the customer values disaggregated per product category



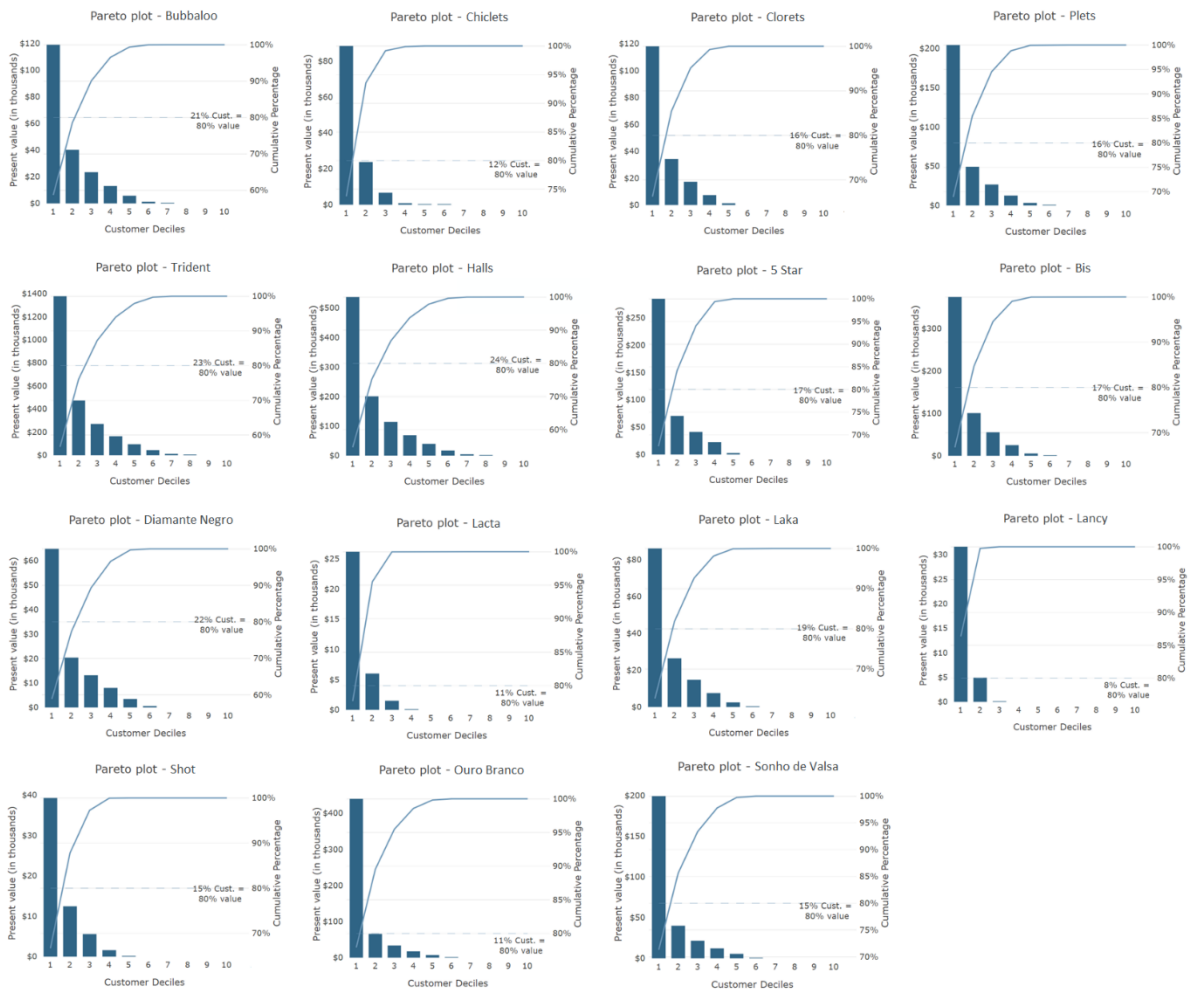
Similarly, the brands also have different levels of concentration of value. Lancy and Ouro Branco, for instance, have high concentration: 8% and 11%, respectively, of the customers represent 80% of the value of these brands. On the other hand, brands such as Bubbaloo, Diamante Negro, Trident and Halls have a lower concentration of value: 21%, 22%, 23%, and 24%, respectively, of the customers represent 80% of the value of these brands.

These results evidence how important it is to take products and brands into account when analyzing customer values, especially in the CPG industry. Once the overall aggregated behavior does not hold when we analyzed the distribution of disaggregated values for every product category and brand, managers should consider the level of concentration when defining marketing strategies for their product and brand portfolios.

6 CONCLUSIONS

Marketing researchers have defined a trade-off between product-centricity and customer-centricity, while recommending the adoption of the later. It is well accepted that even the organizational structure should be set around customers. Even though it is correct, in marketing contexts in which the company's success depend intrinsically on also managing

Figure 10 - Pareto plots using the customer values disaggregated per brand



products and brands, such as the CPG industry, managers face a dilemma when they have to adopt customer-centric metrics such CLV and CE. On one hand, they use traditional aggregated marketing measures, such as market share and revenue, and may end up having their departments organized by brand or product lines. On the other hand, they understand the benefits of organizing marketing efforts around customers and using individual level and forward-looking measures such as CLV and CE to maximize customer values.

Instead of engaging in such dilemma, we propose a different viewpoint over this problem. Products and brands have not lost all their importance inside companies. They are, in fact, the means for companies to create value for customers. The customers, in turn, react to it by experimenting the value provided and generating cash flows when they purchase the branded products. Therefore, it should not be seen as a trade-off, but as an opportunity to integrate customer, product, and brand performance management, reaching a single framework to assess marketing activities performance and drive marketing efforts.

In order to accomplish it, we firstly elaborated the so called CPB framework for integrating customer, product, and brand performance management, which is estimated through

BG/NBD model disaggregated per every existing combination between products and brands. After, we provided detailed analysis of the results of the empirical application of such framework for a large CPG distributor. The results evidence the capacity to coherently manage the expected values of customer, product categories, and brands, extending marketing literature towards a holistic perspective.

By adopting the CPB framework, managers in CPG firms are able to go customer-centric while also not losing sight over their product categories and brands. Additionally, they gain valuable extra information regarding the expected values of all possible intersections between customers, product categories, and brands. These additional levels of analysis based on forward-looking values are relevant, because they reveal that there are different customers that create the majority of value for each product category and brand. Likewise, the distribution of customer disaggregated values differs in level of concentration from one product category to another or from one brand to another.

Given the identified discordances about who are the most valuable customers in each product category or brand, future research could try to define cross-selling opportunities and quantify the additional value that a company would be able to gain if such cross-selling offers were implemented. Finally, the main limitation of the present research is that the proposed model to estimate the disaggregated cash flows does not take into account the possible correlations among products and brands. Future research on the topic could also address such issue.

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