Understanding national brand customer erosion: exploring socio-demographic and weight of purchase factors

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Abstract

Purpose – The purpose of this study is to explore brand customer erosion at both the category and brand levels while considering consumer socio-demographic characteristics and weight of purchase factors.

Design/methodology/approach – Data from 3,563 buyers encompassing 20,601 purchases were collected from a prominent household data panel.

Findings – Brand customer erosion varies depending on socio-demographic factors (householder age, family size, life cycle and social class) and weight of purchase; variations are evident depending on the specific brand.

Originality/value – The paper makes a substantial contribution to the established fields of marketing and consumer behavior literature by opening a new line of research. It does so by demonstrating, the impact of socio-demographic factors on customer erosion. Simultaneously, it presents results that contradict the limited existing research on the influence of weight of purchase on brand customer erosion.

Keywords Customer erosion, Repeat-purchase, Socio-demographics, Weight of purchase, Fast moving consumer goods

Paper type Research paper

1. Introduction

Customer erosion is a relevant topic of great practical and theoretical importance (Dawes *et al.*, 2021a). It refers to a decrease in the rate of repeat-purchases, observed by comparing the number of buyers during a specified timeframe to an initial baseline period (Dawes *et al.*, 2021a). This phenomenon of steady declines in repeat-purchase rates is relatively frequent in stationary markets, being a challenge for both the management of the companies involved and for academia. Thus, nowadays, to maintain market share, companies are counteracting customer erosion by recruiting new buyers, with all the costs that this entails (Nguyen *et al.*, 2021; Yun and Hanson, 2020). Meanwhile, scientific evidence suggests a correlation between brands that experience growth and those with lower erosion rates (Dawes *et al.*, 2021a).

The decline in repeat-purchase rates can be attributed to factors related to product categories or brand characteristics, as well as marketing mix factors such as promotions, pricing or product innovations (Dawes *et al.*, 2021a; East and Hammond, 1996; Ehrenberg, 1988). However, other factors of interest remain under-analyzed. In this research we argue that, given the role of purchaser behavior in customer erosion (Dunn *et al.*, 2021a), analyzing socio-demographic characteristics of the buyers constitutes a research question of interest. So, variations in customer characteristics over time (Gajanova *et al.*, 2019;

Keikhosrokiani, 2022; Kumar and Kumar, 2019), such as marital status, education, employment status, age, changes in life cycle and other socio-demographic factors, may modify consumer behavior (Dunn *et al.*, 2021a; Yilmaz, 2023) and influence customer erosion. And all of this will also depend on the customers' weight of purchase (East and Hammond, 1996). For these reasons, the present study aims to achieve the following objectives: first, to evaluate the impact of specific socio-demographic factors on customer erosion; second, to explore the influence of weight of purchase on customer erosion, both at an aggregate level and at the brand level.

This investigation focuses on exploring consumer behavior within the fast moving consumer goods (FMCG) sector, which is characterized by its stationarity (Trinh and Anesbury, 2015). Meanwhile, the proportion of buyers returning to make purchases from the base year decreases gradually over time (Dunn *et al.*, 2021a). Consequently, long-term success heavily depends on

acquiring new customers (Trinh *et al.*, 2022) and fostering repeat purchasing behavior among current ones (Günther *et al.*, 2022). In this context, if companies could reduce the erosion rate somewhat, they would require fewer new customers to offset the losses. This can lead to reduced expenses for companies as it is claimed that generating additional sales from existing customers is usually more cost-effective than acquiring new ones (Haripersad and Sookdeo, 2018) but, of a certainty, this is a question that depends on many factors and needs to be strongly contrasted (Sharp, 2010).

To improve customer erosion, companies must develop a comprehensive understanding of it and the associated factors. To the best of authors knowledge, there have been a limited number of studies on customer erosion. It remains unknown whether socio-demographic characteristics are correlated with higher or lower erosion rates and, we have only encountered one relevant investigation by East and Hammond (1996) on the influence of weight of purchase on customer erosion, which originates from earlier decades, despite the evolving nature of consumer behavior over time.

For these reasons, it becomes crucial for both the academic and business sectors to gain a more comprehensive understanding of this pertinent matter. While conducting the specified analyses, we investigate customer erosion in national brands (NB) within the milk chocolate category in the Spanish market using data obtained from a prominent household panel data company. The global chocolate market records sales of $48.29bn, dominated by the European market, whose sales reached US$19.95bn in 2021 (Fortune Business Insight, 2022).

The results confirm the existence of customer erosion and highlight significant differences depending on the brand. We found a relationship between socio-demographic and weight of purchase factors concerning customer erosion. Specifically, we observed a trend declining erosion as buyers age and progress through life cycle stages, as well as among consumers classified as light buyers. Larger family size and lower social class are associated with higher levels of customer erosion. These findings provide valuable insights for managers, enabling them to develop strategies to reduce customer erosion. These strategies aim to maintain or increase market share without the need to replace all customers who discontinue their purchases in each period. This research is situated within the domain of consumer buying behavior research, which constitutes a prominent area of inquiry within the field of marketing.

2. Literature review and hypotheses development

2.1 Customer erosion

The term "erosion" refers to the gradual decline the repeat-purchases rates over time when compared to a base period (Dawes *et al.*, 2021a). It is crucial to understand that this individual buyer-level erosion happens as the brand's market share and aggregate loyalty levels stay unchanged. Brand sales are heavily reliant on repeat-purchases. A repeat-purchase occurs when a customer makes another purchase from the same company (Damit *et al.*, 2019; Günther *et al.*, 2022). Customers are more likely to engage in repeat-purchases if they experience satisfaction with the products they have previously purchased (Fazal-e-Hasan *et al.*, 2019). It is also crucial that products are easily remembered, and that they have easy accessibility to them, such as through proper distribution

(Meilatinova, 2021). A customer who does not repeat his or her purchase within a certain time frame, may stop buying that product (Günesen *et al.*, 2021), which may trigger "customer churn/customer abandonment/customer defection" (Wang *et al.*, 2022). Customer churn can be measured through the churn rate, which quantifies the percentage of customers who have discontinued the utilization of a product or service within a specific timeframe, such as monthly, quarterly or annually (Arai *et al.*, 2023).

Among all the customers who purchase a brand within a specific timeframe, only a portion of them make repeat-purchases in the subsequent period (Dunn *et al.*, 2021b). Brands typically have around 30%–60% of their buyers from one period not buying in the next (Bain and Company, 2013). 60% of brands' annual sales originate from buyers who did not make a purchase in the preceding year (Dawes *et al.*, 2021a). This pattern primarily results from infrequent buyers (Dawes *et al.*, 2021a; Dawes *et al.*, 2021b; Ehrenberg, 1988). Indeed, the frequency of brand purchases for numerous FMCG conforms to a negative binomial distribution, consistently exhibiting an inverted J-shaped curve characteristic of such products. This trend highlights a significant prevalence of many infrequent purchases alongside a minority of frequent purchases. Robust findings confirm the prevalence of infrequent purchasers. For instance, ultra-light buyers contribute almost 31% to the brand's sales volume and value over 5 years (Hossain *et al.*, 2024). In the categories of carbonated soft drinks and breakfast cereal, only four out of every ten customers make a single purchase within a five-year span (Dawes and Trinh, 2017). Over 80% of packaged rice buyers in Asia purchase rice less frequently than once a month. In contrast, the majority of loose rice buyers demonstrate a higher purchase frequency, often acquiring rice on a daily or weekly basis (Bairagi *et al.*, 2021).

Besides infrequent purchases, in multiples consumer goods markets, customers often demonstrate loyalty to various brands rather than exclusively sticking to one (Uncles and Kwok, 2013). This behavior can be attributed to strong attitudes for two or more brands, coupled with minimal perceived differentiation, information overload or ambiguous product information (Walsh *et al.*, 2007) or simply so that consumers can ensure brand availability at the retailer, among other factors (Arifine *et al.*, 2019). These consumers typically maintain several brand partnerships within a defined period (East *et al.*, 2008; Uncles *et al.*, 2003), allocating each brand a share of their purchases, even if minimal, over time (Banelis *et al.*, 2013; Dawes, 2008). As a result, buyers tend to exhibit split loyalty, often selecting a different brand for subsequent purchases within their brand repertoire (Abdullaeva, 2020; Arslan, 2020) but, they may eventually revert back to their initially preferred brand (Dastidar, 2019). For example, in electronic products, 25% of consumers expressed a willingness to switch to alternative brands (Kumar and Kumar, 2019). In the tourism market, numerous tourists exhibit loyalty to multiple destinations (Almeida-Santana and Moreno-Gil, 2018).

In stationary markets, certain individual purchasing propensities undergo change (Dawes *et al.*, 2021a). The presence of infrequent buyers within the category, along with consumers displaying divided loyalty and behaviors aimed at seeking variety or specific brands, may help explain this phenomenon. Even so, the aggregate brand purchase propensities show less volatility, and consistent patterns emerge regardless of how the data is grouped together (Ehrenberg *et al.*,

2004). This includes a decline in the rate of repeat-purchases. Ehrenberg (1988) compared repeat-purchases from Q1 to Q2 with those from Q1 to Q3, and subsequently to Q4 found that the erosion over the extra three months was 6.5%. East and Hammond (1996) analyzed erosion across nine product categories and uncovered an erosion rate of 11% within the first year for the leading brand. This percentage escalated as the brand's market share decreased, reaching 18% for brands with lower market share. They also noted a deceleration in erosion rates after the first year. Their exploration found similar erosion results regardless of whether buyers were light, medium or heavy purchasers. Research by Dawes et al. (2021a) extended the analyzed time period and examined 20 brands across consumer goods categories revealing an erosion rate of 26% over 3 years. This percentage decreased as the years progressed.

In line with existing research, it is hypothesized that:

H1. The rate of repeat-purchase decreases over time.

There is limited information available regarding factors influencing customer erosion. Customer erosion has been found lower as the brand size increase (East and Hammond, 1996). Additional variables associated with category and brand attributes, in conjunction with components of the marketing mix, affect customer erosion. Particularly, the incidence of price promotions, the presence of niche brands and store brands, a broader product range, extensive penetration of major brands category penetration were correlated with reduced erosion levels (Dawes et al., 2021a). Other factors remain to be thoroughly examined, some of which we will explore below.

The findings of this research extend those of prior research (Table A1 in Appendix 1).

2.2 Socio-demographic factors and brand customer erosion

Socio-demographic factors are linked to consumer behavior (Jewargi et al., 2022; Rahman et al., 2020). These factors encompassing various aspects of consumers' demographic and social characteristics, play a crucial role in characterizing consumers in meaningful ways (Keller, 2021). Recognizing the inherent diversity and heterogeneity among consumers is paramount for brands aiming to meet the diverse needs of their customer base. A strategic approach focused on reducing erosion is likely to be more effective when groups of customers with homogeneous characteristics can be identified (Khan et al., 2020).

2.2.1 Householder age

Age influences purchasing behavior, resulting in variations between older and younger individuals (Anesbury et al., 2022; Chawla and Joshi, 2020; Kral et al., 2020). Elderly consumers tend to have a higher likelihood of repurchasing a brand they have previously bought, influenced by their accumulated repeated experiences (Drolet and Yoon, 2020) and smaller brand repertoires, suggesting a lower brand-switching propensity (Mecredy et al., 2022). They also undergo a decline in information-processing (Drolet and Yoon, 2020), leading to reduced search behavior (Lubis et al., 2024). In contrast, younger individuals are characterized by heightened susceptibility to external influences, making them more inclined to switch their preferred brand (Kral et al., 2020). For example, in the automóvile sector 42% of young buyers are likely to repurchase their previous brand, increasing to 72% among old-old individuals (Lambert-Pandraud et al., 2005). In the French perfume market, consumer behavior diverges across age groups, with older consumers displaying greater loyalty to specific brands. Younger individuals exhibit a higher tendency to switch brands, favoring new ideas and providing an advantage to recent brand launches (Lambert-Pandraud and Laurent, 2010). Additional investigation shows varying results depending on the analyzed category (Mecredy et al., 2022; Trinh et al., 2023).

Older consumers also tend to purchase categories less frequently compared to their younger counterparts (Singh et al., 2015), resulting in reduced exposure to competitor products and, consequently, less competitor information. Among mature consumers in FMCG categories, consumption frequency generally decreased with advancing age (Singh et al., 2015). In the case of the Bottled Tea category, the purchase frequency among buyers aged 40–49 was 30% higher than that among those aged 60–74. Individuals in Finland aged 60 years or older made 10.8% fewer purchases of alcohol than those aged 30–59 years (Lintonen et al., 2020). Contradictory results have been found in the organic food category, with older generations tending to purchase organic food more frequently (Kamenidou et al., 2020).

According to the literature reviewed, older consumers show a greater tendency to maintain their preferences over time. This translates into:

- a lower propensity to switch brands; and
- a lower exposure to competitive information.

Therefore, we argue that:

H2. Customer erosion decreases as the age of the householder increases.

2.2.2 Family size

Over the past decades, there have been swift transformations in family size (Kumar, 2015), impacting consumer decision-making (Kim et al., 2018). Family size refers to the number of individuals living permanently in the household. Household requirements, encompassing purchases affecting all household members, have become increasingly intricate, especially for larger households, notably in areas such as procuring preferred food items for the entire household (Arunachalam et al., 2020), thereby influencing a broader brand repertoire. Larger families, seeking alternatives that better cater to the diverse tastes of their members (Cho et al., 2019), exhibit a greater inclination to discontinue purchasing a brand than smaller ones. Supporting this, Seetharaman and Chintagunta (1998) reported a positive effect between family size and variety seeking, indicating that larger families are more likely to demonstrate split loyalty. Specifically in FMCG, a significant relationship has been identified between family size and brand switching (Aurier and Mejía, 2021).

Larger families encounter heightened financial constraints, making them more price-sensitive and potentially dividing their loyalty to optimize their grocery expenditures. As larger families tend to prioritize seeking deals and discounts, this often leads to

lower levels of brand loyalty (Bu and Go, 2013) and, consequently, a broader brand repertoire (Ngobo, 2011). For instance, Hoch (1996) found a positive correlation between household size and price sensitivity.

If larger households, confronted with the task of allocating budgets among multiple family members, tend to prioritize options that accommodate everyone while exhibiting heightened price sensitivity, they may demonstrate both split loyalty and variety-seeking behavior. This trend could potentially result in a decline in the frequency of repeat-purchases over time. Consequently, this prompts the formulation of the following hypothesis:

H3. Customer erosion increases as family size increases.

2.2.3 Life cycle

The life cycle encompasses various consumer characteristics, including age, household size significant life events such as marriage, the arrival or departure of children (Gajanova et al., 2019). The concept of life cycle suggests that as a family progresses through different life stages, the roles of its members evolve, resulting in changes in their financial situation, lifestyle, circumstances, time constraints leisure habits (Amirtha and Sivakumar, 2022). These changes in individual lives also significantly influence the attainment of a balance between work and personal life, as well as consumer preferences and choices (Gajanova et al., 2019; Wells et al., 2023).

To address the challenges posed by life cycles and new circumstances, individuals strategically plan numerous activities and use savings depending on different phases of the expected life cycle, thereby resulting in significant alterations to consumption patterns (Lee et al., 2018; Moreau and Stancanelli, 2015). Financial pressures during the early family stage, when there are dependent children, may prompt households to switch to less expensive alternatives, while, during the post-family stage, when there are no dependent children, households may find themselves in a more favorable financial situation, allowing them to purchase their favored brands, leading to increased brand loyalty. For instance, customers are most likely to exhibit the lowest loyalty when experiencing the family stages in the household life cycle, making them more prone to split loyalty (Trinh, 2014). Specifically, young childless couples, middle-aged couples with children young single individuals were predominantly associated with being truly loyal customers (Gajanova et al., 2019). In the resort sector, variations among life cycle have been observed in terms of multiple loyalty factors. Particularly, newly married couples exhibited notably higher intentions to revisit compared to families in the full nest stage. Interestingly, the single nest group showed the most pronounced inclination to return (Choi et al., 2010).

The review of the previous literature enables us to formulate the following hypothesis:

H4. Customer erosion decreases as the household transitions through different life stages.

2.2.4 Social class

Social class is a crucial determinant in comprehending food purchasing behavior (Bukhari et al., 2020). This term refers to a cohort of individuals characterized by a specific socio-economic status, encompassing distinct values and attitudes that differentiate them from other social strata. Within the human social hierarchy, distinct social classes give rise to different needs, leading to varying consumer preferences (Chen et al., 2019; Shavitt et al., 2016). Identifying an individual's classification within a specific social class can be achieved through various indicators, including the perceived prestige of their occupation, income level, their status within their community, as well as their possession of assets and alignment with particular value systems (Iskamto, 2020). From a marketing standpoint, this categorization is intriguing because it emphasizes that individuals within a specific social class exhibit similar shopping habits (Kotler and Armstrong, 2004).

There exists a dependence between social class and brand loyalty. Lower-social class consumers, constrained by reduced purchasing power, often grapple with budget constraints when choosing between brands, leading to fewer opportunities for repeat-purchases compared to their higher-social-class counterparts. In FMCG products, income, education occupation significantly influence the likelihood of repeat-purchases (Mann and Rashmi, 2010). However, there are cases where contrary trends have been observed, such as in the market of plant-based meat alternatives, where lower social classes tend to engage in less frequent repeat purchasing compared to those from higher social classes (Neuhofer and Lusk, 2022). Research has also found no discernible relationship between social class and repeat-purchase behavior for counterfeit products (Harun et al., 2020).

If lower social class households already demonstrate a lower repeat-purchase rate, it suggests reduced exposure to the product category and brands. This reduced exposure may result in these products losing positions in consumers' top-of-mind awareness, potentially increasing the likelihood of abandonment. Consequently, it is plausible to propose the following hypothesis:

H5. Higher customer erosion is associated with a lower social class.

2.3 Weight of purchase and brand consumer erosion

A significant proportion of purchases can be attributed to a select group of consumers known as "heavy buyers". Across most products, there are considerable quantities of "light" or infrequent buyers, making purchases once or twice, fewer "medium" buyers notably fewer heavy buyers (Dawes and Trinh, 2017). The Pareto principle, commonly known as the 80/20 rule, posits that 20% of consumers account for 80% of purchases. For FMCG categories, the Pareto share is often below 80%, with percentages as low as 73% (McCarthy and Winer, 2019) or even 67% (Kim et al., 2017) ranging between 28% for the orange category and 66% for the banana category (Anesbury et al., 2020). Nonetheless, a small number of buyers still contribute significantly to purchases.

Despite the concentration of sales in a small number of buyers, the purchasing behavior of heavy customers is not consistently stable over time. Their heightened exposure to numerous brands and potential fatigue from repetitive purchases of the same brand, or even due to variations in product consumption contexts,

typically exhibit a broader brand repertoire (Anesbury *et al.*, 2020; Dawes and Trinh, 2018) resulting in a higher split loyalty. An examination of more than 150 brands across 15 categories indicates that only approximately 50% of households classified as heavy buyers for a brand in one year continue to exhibit repurchase behavior in the subsequent year (Romaniuk and Wight, 2015). In the FMCG sector, at the category level, only 72% of the most frequent buyers in the first year persisted in their heavy purchasing behavior in the following year (Romaniuk and Wight, 2010).

If a portion of heavy users decreases their purchase frequency in subsequent periods due to factors such as fatigue from repetitive purchases of the same brand or variations in product consumption contexts, some of them may even stop purchasing their preferred products or brands, potentially contributing to an erosion of customers at an aggregate level. Based on the aforementioned discussion, it can be inferred that heavy buyers are more prone to erosion compared to light buyers. Consequently, we can formulate the following hypothesis:

H6. Customer erosion increases as weight of purchase increases.

3. Research method

3.1 Data
This research used data from a prominent household panel data company, encompassing over 12,000 households in the Spanish market. The panel data offer purchase histories for a sample of households, acknowledging variations in individual purchasing propensity patterns among customers. Some may buy a brand twice a year, while others purchase it every two years so forth, making an extended examination period essential to accurately identify when customers are genuinely lost. Data covering a 3-year period, specifically spanning from 2017 to 2019, were used, encompassing a total of 20,601 purchases conducted by 3,563 consistent buyers. This approach aims to avoid confounding erosion results with panel attrition. These customers made purchases of one, two or three of the brands. Table A2 in Appendix 1 summarizes the descriptive statistics of the sample.

We opted to examine the milk chocolate category in the Spanish market. Buyers of the milk chocolate tablet category purchase these products frequently and base their brand choice on previous experiences (Kiss *et al.*, 2022). To minimize the potential impact of small brands with limited purchase data, we have specifically chosen the three most dominant brands in the market. These brands collectively represented 87% of the market share for milk chocolate NB tablet category in 2019. For this exploration, we have renamed the brands as Brand 1, Brand 2 Brand 3.

Following the analysis of the data used in this research, we have confirmed that the milk chocolate tablet category exhibits stationarity, with minimal variations of less than three percentage points in brand market share from one year to another. In this investigation, we used a stricter criterion for market share variation, requiring a maximum change of two percentage points. During the three-year study period, the maximum market share variation for Brand 1 and Brand 2 was 2 percentage points, indicating that these brands experienced

stable market share levels throughout the observed period. On the other hand, Brand 3 exhibited a smaller maximum market share variation of only one percentage point, suggesting a more consistent market share performance compared to the other two brands.

3.2 Statistical analysis
In this study, we adopted a behavioral methodological approach that has been previously used in research conducted by Dawes *et al.* (2021a), East and Hammond (1996) and Ehrenberg (1988). By tracking a cohort of brand purchasers over several quarters, we aimed to identify any decline in repeat-purchases.

To test hypotheses 1–5, the purchases made by the buyers were grouped into quarters, resulting in 12 quarters. To gauge erosion, we initially identified all households that purchased each brand during the first quarter (base period). In the subsequent quarters, we calculated the proportion of households that, having made a purchase in the base period, repeat their purchase, enabling us to observe the gradual loss of customers over time. A weighted approach calculates the average erosion for the three brands, considering each brand's market share. Each brand's repeat-purchase value is multiplied by its corresponding market share before calculating the average erosion (East and Hammond, 1996).

To ensure consistency and mitigate the impact of short-term sales fluctuations within each data set, we conducted the analysis twice, using the first and second quarters as the base period in separate iterations. Subsequently, we computed the average results from both iterations. This methodological approach enabled us to examine the repeat-purchase rate over a span of 9 quarters (equivalent to 27 months), from Q4 to Q12. By using 12 periods, we could comprehensively analyze erosion starting from Q4. Initially, we computed repeat-purchase data spanning from Q1 to Q12. To calculate erosion, we compared the repeat-purchase rate of each period with that of the baseline period.

For this purpose, we used the first and second periods to compute an average, which served as our baseline period. Consequently, we obtained repeat-purchase data spanning from Q3 to Q12. This data set facilitated the calculation of the erosion rate for each of these periods, allowing for comparisons, such as between Q3 and the base period (the average of Q1 and Q2), and so forth. The variation in the repeat-purchase rate in each period was calculated using the following formula: $(Q3 - Qi)/Q3$, where Q represented the repeat-purchase rate in each period.

To test H6, we adopted the approach used by East and Hammond (1996), striving to establish a buyer distribution comprising 50% light buyers, 30% medium buyers 20% heavy buyers, aligning with their proposed distribution. Due to the discrete integer nature of purchase behavior, the actual outcomes for each brand deviated slightly from the intended proportions. Specifically, for Brand 1, the distribution was 49.81% light buyers, 30.14% medium buyers 20.05% heavy buyers. Brand 2 exhibited a distribution of 49.93% light buyers, 30.05% medium buyers 20.02% heavy buyers, while Brand 3 displayed a distribution of 49.49% light buyers, 30.03% medium buyers 20.48% heavy buyers. Similarly, we chose a more extended time frame, a full year as the base period

(in contrast to East and Hammond (1996) – nine month period), which spanned from Q1 to Q4. This decision was made to broaden the customer base and increase the probability of infrequent buyers making repeat-purchases. Using different time spans for the calculation of the baseline period in various analyses allowed for additional exploration of their impact on the obtained results (East and Hammond, 1996).

Table A3 in Appendix 1 shows the independent variables used in this research. "Householder age" refers to the age of the individual, regardless of gender, who is responsible for making household purchases. The household panel data company from the Spanish market has provided us with consumer social class classification.

3.3 Findings

The general upper part of Table 1 shows the repeat-purchase rates from Q3 to Q12 for each individual brand, as well as for the aggregate of the three. The first column displays the base period (average Q1 and Q2), showing the 100% of the buyers to be analyzed, which is used to compare with the number of buyers who repeat-purchase in the subsequent periods. The second column shows that 31% of the customers who purchased Brand 2 (as an example) in the base period repeat their purchase in the following period (Q3) and 26% in Q12, which implies a customer erosion of 14% for that period. The observed variation in the percentage of buyers across different

periods for all analyzed brands, relative to the base period, suggests that buying propensity is not static but rather changes over time (Scriven et al., 2017). Otherwise, we would expect the repeat-purchase rate to remain constant at 31% for Brand 2.

The three brands undergo erosion. From Q3 to Q12, the average repeat-purchase rate for the combined brands decreases from 28% to 21%. On average, brands both lose and gain 26% of their customers over each 9-quarter period, resulting in an average erosion of 2.9% per quarter. Significant differences exist among the brands, with Brand 3 experiencing the most substantial erosion (62%), whereas Brand 2, holding the highest market share, encounters the least erosion, at 14%. In a stable market, this erosion is offset by the acquisition of new customers among those who are not currently purchasing the brand.

In the short term, the results reveal a gradual decrease in the percentage of repeat buyers, dropping from 28% in Q3 to 26% in Q6, resulting in an erosion of 7% (Q6-Q3 as a percentage of Q3). In Q7, there is a notable decline, lowering the percentage of repeat-purchases to 20%. This pattern is more pronounced in Brand 1 and Brand 2, while Brand 3 shows a consistent decrease in repeat-purchase rates in most of the analyzed periods. This decline could be attributed to a shift in purchasing patterns, possibly influenced by the summer heat in Spain, which particularly affects categories such as chocolates, whose sales also decrease significantly due to their unsuitability for high temperatures. Conversely, other categories like ice

Table 1 General quarterly repeat-purchase rates and erosion by householder age

| | | % Repeat-buyers in subsequent quarters vs base period | | | | | | | | | | | Erosion |
| | | | | | | Period | | | | | | | |
		Base period Aver. Q1 and Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q3-Q12 as % Q3
General	Brand 1	100	21	20	21	16	11	11	11	13	8	9	58
	Brand 2	100	31	32	31	31	23	26	26	26	24	26	14
	Brand 3	100	26	24	22	18	14	15	16	12	7	10	62
	Average	100	28	29	28	26	20	22	22	22	19	21	26
Householder age	Brand 1	100	7	11	11	0	4	0	0	4	7	0	100
−35	Brand 2	100	22	11	15	7	19	19	11	0	7	19	17
	Brand 3	100	60	0	20	40	20	40	0	0	0	0	100
	Average	100	27	9	15	12	17	20	8	0	6	13	53
	Brand 1	100	19	21	28	20	11	11	15	16	14	12	40
35–49	Brand 2	100	34	32	35	36	26	28	26	22	25	25	26
	Brand 3	100	29	17	14	6	0	3	11	0	0	9	70
	Average	100	31	28	31	28	19	21	22	17	19	20	34
	Brand 1	100	27	22	29	23	15	19	15	16	10	9	68
50–64	Brand 2	100	31	37	35	34	28	27	30	32	30	31	0
	Brand 3	100	30	27	29	21	20	14	20	23	16	14	53
	Average	100	30	33	33	30	25	24	26	28	24	25	18
	Brand 1	100	4	4	0	0	4	4	0	9	4	9	8
>=65	Brand 2	100	37	38	38	36	30	36	35	37	24	30	18
	Brand 3	100	24	38	14	21	17	24	21	17	7	7	71
	Average	100	30	33	28	28	24	30	28	29	18	23	23
	Brand 1	100	21	20	21	16	11	11	11	13	8	9	58
Total	Brand 2	100	31	32	31	31	23	26	26	26	24	26	14
	Brand 3	100	26	24	22	18	14	15	16	12	7	10	62
	Average	100	28	29	28	26	20	22	22	22	19	21	26

Source: Authors' own work

cream experience an increase in sales, as their consumption is closely associated with the summer months.

The results presented provide support for H1, which posits that the rate of repeat-purchase decreases over time which is consistent with the hypotheses.

Table 1 presents the results of customer erosion categorized by householder age. Overall, the results imply that customer erosion is impacted by the age of the householder. As can be observed in the last column of the table, there is a decrease in customer erosion as householders age. This trend holds true up to the 50–64 age group. For higher householder ages, customer erosion increases moderately compared to the immediately preceding age segment. At the brand level, the results are more fragmented, with Brand 3 particularly showing a reduction in erosion from ages −35 to 50–64. For older age groups, it exhibits a contrary trend (Figure 1). It's worth noting that Brands 1 and 3 experience 100% erosion for householder aged −35, implying a complete turnover of their customers in a stable market over the 9-quarter period analyzed. In contrast, for the 50–64 household age segment, Brand 2 has not experienced erosion during the same period. According to these results, globally H2 is partially supported.

Table A4 in Appendix 1 displays the results of customer erosion by family size. The findings reveal a growing trend of erosion over the 9-quarter period as households have a larger family size. This trend becomes noticeable for households with three or more individuals. Families consisting of 3 people experience an erosion level of 19%, while households with 5 or more people encounter erosion at 40%. The smallest family sizes (erosion = 33%) and largest ones (erosion = 40%) exhibit erosion rates above the average (26%), while the intermediate family size show erosion rates below the average. This allows visualizing customer erosion results based on family size in a U-shaped pattern. For all family size segments, a general trend of decreasing purchase rates is observed until the Q7 period, followed by a relative maintenance of these rates from that point onwards. At the brand level, each one follows a distinct trend, with Brand 1 standing out for aligning with a similar pattern as indicated in the hypothesis (Figure A1 in Appendix 2). The conducted analyses partially support H3 at a global level, which posited that customer erosion rises with an increase in family size.

Figure 1 Customer erosion depending on householder age in period Q12 at the brand level

Erosion in Q12 (%)
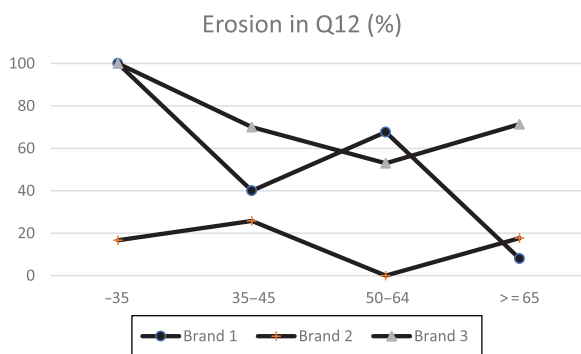
Source: Authors' own work

Table A5 in Appendix 1 reports the results of customer erosion by life cycle. From the transition of independent adulthood to retirement stages of life, there is a declining trend in customer erosion, except for households with children under 6 and households with children aged 6–17. Independent young households Exhibit 100% customer erosion for the three analyzed brands. At the brand level, the results are even more fragmented (Figure A2 in Appendix 2), with Brand 2 largely aligning with the hypothesis proposed, showing contradictory outcomes within the young people, no children, segment. The conducted analyses partially substantiate H4 at the global level.

Table A6 in Appendix 1 presents the results of customer erosion segmented by social class. Lower customer erosion is associated with a higher social class. While the erosion rate for the low social class is 35%, the erosion rates for the high and middle social classes are half that, at 17%. From the middle social class onwards, erosion remains below the average, while for the lower social classes, erosion exceeds the average. At the brand level, the trend is once again more fragmented, with Brand 3 aligning with the hypothesis, but not Brand 1 or Brand 2. It is noteworthy that Brand 2 exhibits a high degree of erosion for the high and middle-high segments of social class (Figure A3 in Appendix 2). The results support the acceptance of H5 at an aggregate level.

Table 2 shows the results of customer erosion for weight of purchase. As weight of purchase increases, the erosion rate also increases. The average erosion rate is 18% over the 7 quarters, which is lower than the 26% from the previous analysis conducted for socio-demographic variables over 9 quarters. This disparity can be attributed to the choice of a one-year base period and, consequently, a smaller number of comparison periods. There are notable differences in erosion rates based on whether buyers are classified as heavy, medium or light. While heavy buyers display a higher repeat-purchase rate compared to the base period, they also encounter more substantial erosion, reaching levels as high as 47% over the seven quarters analyzed (Q5-Q12), which exceeds the average (18%). In contrast, medium and light buyers have a lower repeat-purchase rate. They experience less erosion than the average, with figures of 13% and 4%, respectively. In terms of brand, all of them follow a consistent trend (Figure A4 in Appendix 2). While heavy buyers show the highest erosion, and light buyers experience the least, Brands 1 and 3 undergo twice the erosion compared to Brand 2. Notably, Brands 2 and 3 stand out for experiencing no erosion in the 12th period within the light buyer's segment. According to these results, H6, is supported.

4. General discussion

Managing customer erosion appropriately is a challenge of great interest to both academics and practitioners (Dawes et al., 2021a; Dunn et al., 2021a). It is of great relevance to explore the factors that influence this phenomenon, enhancing our understanding of its impact. First, our results confirms that customers' repeat-purchase rate declines over time; and that the presence of this phenomenon can be explained by a set of different factors scarcely analyzed by previous literature. In this sense, our research shows that both socio-demographic factors that characterize customers and weight of purchase, influence customer erosion. Specifically, we have found a trend of lower

Table 2 Quarterly repeat-purchase rates from base (Q1 to Q4) and erosion by weight of purchase

Weight of purchase	% Repeat-buyers in subsequent quarters vs base period (Q1 to Q4)								Erosion (Q12 to Q5) −Q12 as % Q5
	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	
Heavy buyer									
Brand 1	38	19	12	15	12	16	9	10	74
Brand 2	46	37	30	33	30	31	24	29	38
Brand 3	38	33	31	23	18	10	15	13	67
Average	44	34	27	29	26	25	21	23	47
Medium buyer									
Brand 1	10	6	6	4	4	3	4	4	54
Brand 2	23	22	14	18	20	19	20	22	7
Brand 3	15	15	11	14	14	14	5	11	25
Average	20	18	13	15	17	16	15	17	13
Light buyer									
Brand 1	15	14	8	11	13	11	10	11	29
Brand 2	22	21	17	17	18	20	17	22	1
Brand 3	11	9	7	13	13	8	5	11	0
Average	19	18	14	15	17	16	14	18	4
Total									
Brand 1	16	12	8	9	9	9	7	8	50
Brand 2	26	24	18	20	21	21	19	23	12
Brand 3	16	15	12	15	14	10	6	11	32
Average	23	20	15	17	18	18	15	19	18

Source: Authors' own work

erosion as buyers age and progress through different stages of the life cycle, as well as for those consumers who make more purchases (heavy buyers). This suggests that age may play a relevant role in customer erosion for the analyzed category, as it is related to the life cycle eventually with heavy users. Family size and social class also have an influence on customer erosion. At the brand level, there are varying degrees of customer erosion across different segments analyzed for each variable, but typically, it is the leading brand that experiences lower erosion (East and Hammond, 1996). This finding does not mean brand loyalty is declining at an aggregate level – these brands exhibit stable aggregate-level metrics, while erosion occurs under the surface. With that, the findings of this investigation expand on previous research within the domain of consumer buying behavior by uncovering some additional factors that affect customer erosion, which had not been previously analyzed, opening new lines of investigation.

4.1 Theoretical implications

This study contributes to multiple theoretical advancements. We have developed and expanded upon the findings of prior research conducted by Dawes *et al.* (2021a), East and Hammond (1996) and Ehrenberg (1988). The article posits that a more comprehensive consideration of socio-demographic variables is crucial for a nuanced understanding of customer erosion dynamics. By identifying and incorporating these variables, the research aims to contribute to a refined and more accurate theoretical framework for comprehending the complexities of customer erosion, thereby enhancing the overall depth and applicability of existing theories in the field.

Results of this research are consistent with prior findings, confirming the continuous decreases in repeat-purchase rates were counterbalanced by rises in the acquisition of new buyers, resulting in no decline in market share. This suggests that buyer purchasing propensities are not fixed (Scriven *et al.*, 2017); in fact, they evolve over time.

Previous studies indicated that customer erosion was influenced not only by category and brand attributes, but also by marketing mix variables such as product range and promotional activities (Dawes *et al.*, 2021a). This study demonstrates that consumer socio-demographic characteristics and weight of purchase factors are also related to customer erosion. Socio-demographic factors analyzed in this research included household age, family size, life cycle social class, all of which we found to impact customer erosion. The results found for weight of purchase contradict the findings by East and Hammond (1996), as their research did not reveal significant differences among heavy, medium light buyers regarding customer erosion. This analysis also demonstrates significant differences in erosion levels for each of the analyzed factors, depending on the brand.

Another theoretical implication arises from the observation that weight of purchase affects customer erosion differently, particularly in relation to the length of the base period considered. Including longer time spans in the base period incorporates a larger proportion of light buyers. Consequently, depending on the length of the base period, the results for customer erosion will be impacted due to the differing proportion between heavy and light buyers. It is crucial to clearly define the base period to be analyzed, as this decisively influences the results.

4.2 Managerial implications

The research findings can assist brand managers in maintaining or even increasing market share. Stationary brands maintain their market share stable (Anesbury *et al.*, 2022), despite losing a substantial proportion of buyers in each period (Bain and Company, 2013). This implies that they must compensate for this loss by attracting new customers. Overall, brands achieve stability by consistently attracting a significant influx of new buyers. Reaching buyers who do not currently purchase is crucial, but if erosion can be reduced, brands would need fewer new customers to sustain market share or it would allow for an increase in the brand's market share.

The diversity in consumer behavior when discontinuing purchases from brands underscores the significance of comprehending socio-demographic profiles and weight of purchase for consumers who disengage. Understanding that certain socio-demographic factors and weight of purchase influence customer erosion will enable brand managers to comprehend how to reduce erosion. Disparities in customer erosion are evident at the brand level. The divergent responses identified across different brand scenarios regarding socio-demographic factors (such as householder age, family size, transition life social class) and the impact of weight of purchase, as revealed in this research, underscore the essential need for customized strategies to reduce erosion. For instance, to mitigate erosion among younger consumers – who, segmented by age groups, are the most prone to erosion who exhibit heightened susceptibility to external influences and a propensity to switch brands – a strategic approach could involve horizontal line extension (He *et al.*, 2024), introducing innovative products with unique features, creative designs or partnerships with influencers who cater to this demographic. Implementing a personalized marketing strategy tailored to the preferred communication platforms of younger consumers, such as social media; developing online brand communities to generate engagement and enhance brand evangelism (Bhandari *et al.*, 2024); and forming partnerships with brands or prominent figures that resonate with this demographic, could yield effective results. Similar specific strategies can be applied to other groups based on their socio-demographic characteristics.

5. Limitations and future research

This study has made a significant contribution to understanding consumer erosion in the Spanish market for milk chocolate tablets. However, it has also identified limitations that indicate potential areas for future research.

The primary limitation of this investigation stems from the consideration of a single product category in the Spanish market, albeit addressing previously unexplored issues in the literature, thereby making a significant contribution to advancing knowledge in the field of erosion. Nevertheless, additional studies in other product categories and geographic contexts would be necessary to verify the validity, consistency generalizability of the results. In our view, the consumer sample used, the reliability of the data the nature of the analyzed product category, featuring powerful manufacturer brands, instill confidence in the obtained results and their extension to other products with similar characteristics. Subsequent studies across other categories, with samples as extensive as those used

in the present work, will enable the confirmation or refinement of the relationships found between socio-demographic variables and erosion.

The second limitation arises from variations in sample sizes among the various segments analyzed for each socio-demographic variable and purchase weight. To mitigate potential biases stemming from these differences and to enhance the validity of the research findings, it would be beneficial to augment the sample size for specific consumer groups.

Comprehending the dynamics of repeat-purchases relies on the accessibility of the product for consumers. It becomes crucial to investigate the influence of distribution channels and retailers on customer erosion. Future research in this realm should encompass a comprehensive examination of both physical retail outlets and online platforms to achieve a thorough understanding of consumer behavior patterns. The significant expansion of the private label may potentially affect customer erosion. For this reason, another promising avenue for future research could involve integrating private labels and exploring their potential influence on customer erosion.

It is hoped that this research serves as inspiration for others and encourages futures research on the topic of customer erosion.

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Further reading

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Appendix 1

Table A1 The contribution of this research builds on the prior ones

Relevant research studies	Ehrenberg (1988)	East and Hammond (1996)	Dawes *et al.* (2021)	This research
Analysis of the Impact of Sociodemographic Factors on Customer Erosion	No	No	No	Yes
Analysis of the Impact of weight of purchase on Customer Erosion	No	Yes (some what dated)	No	Yes

Source: Authors' own work

Table A2 Sample characteristics (sample size= 3,563)

	Segment	Sample size	%
Householder age	−35	213	6
	35 to 49	1,377	39
	50 to 64	1,455	41
	>=65	518	15
Family size	2 People	1,078	30
	3 People	955	27
	4 People	1,182	33
	>=5 People	348	10
Life cycle	Independent young	45	1
	Young people no children	139	4
	Independent adult	96	3
	Adults no children	443	12
	Single-parent households	353	10
	Household children −6	524	15
	Household children 6-17	975	27
	Household children 17-30	586	16
	Retired	402	11
Social class	Low	725	20
	Middle low	932	26
	Middle	1,266	36
	High and middle high	640	18

Source: Authors' own work

Table A3 Independent variables

Weight of purchase	Householder age (years)	Family size	Life cycle	Social class
Heavy buyer brand 1	−35	2 people	Independent youth	Upper and Upper-middle class
Medium buyers brand 1	35 to 49	3 people	Young people, no children	Middle class
Light buyers brand 1	50 to 64	4 people	Independent adult	Lower Middle Class
Heavy buyer brand 2	≥65	≥5 people	Adults no children	Lower Class
Medium buyers brand 2			Single-parent households	
Light buyers brand 2			Household with children −6	
Heavy buyer brand 3			Household children 6-17	
Medium buyers brand 3			Household with children 17-30	
Light buyers brand 3			Retired	

Source: Authors' own work

Table A4 Quarterly repeat-purchase rates and erosion by family size

| Family size | % Repeat-Buyers in Subsequent Quarters vs base period Period | | | | | | | | | | Erosion |
	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q3-Q12 as % Q3
2 People											
Brand 1	12	7	3	13	5	5	8	8	5	5	57
Brand 2	33	35	33	30	29	29	31	32	26	26	20
Brand 3	29	32	15	18	15	21	21	15	6	6	80
Average	29	31	25	26	23	24	26	25	19	20	33
3 People											
Brand 1	27	28	36	14	11	19	16	23	14	12	55
Brand 2	32	33	38	39	27	26	25	28	24	29	12
Brand 3	17	17	21	8	4	4	8	8	0	13	25
Average	29	30	35	30	20	21	21	24	18	23	19
4 People											
Brand 1	22	19	26	22	13	8	12	11	10	7	70
Brand 2	32	35	34	35	28	19	29	27	29	32	2
Brand 3	42	15	21	12	18	6	18	18	21	18	57
Average	33	29	31	29	24	15	24	23	25	26	21
>=5 People											
Brand 1	15	18	30	21	18	18	15	12	15	4	74
Brand 2	42	40	37	33	25	35	35	25	25	26	38
Brand 3	11	11	0	0	0	7	4	4	0	7	33
Average	32	32	29	25	19	28	27	19	19	19	40
Total											
Brand 1	21	20	21	16	11	11	11	13	8	9	58
Brand 2	31	32	31	31	23	26	26	26	24	26	14
Brand 3	26	24	22	18	14	15	16	12	7	10	62
Average	28	29	28	26	20	22	22	22	19	21	26

Source: Authors' own work

Table A5 Quarterly repeat-purchase rates and erosion by life cycle

| Life cycle	% Repeat-Buyers in Subsequent Quarters vs base period Period										Erosion Q3-Q12 as % Q3
	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	
Independent young											
Brand 1	25	0	0	0	0	0	0	0	0	0	100
Brand 2	20	20	0	0	0	0	0	0	0	0	100
Brand 3	67	67	0	0	0	0	0	0	0	0	100
Average	29	26	0	0	0	0	0	0	0	0	100
Young people no children											
Brand 1	50	0	0	0	0	0	0	50	0	0	100
Brand 2	57	14	14	14	29	29	0	14	14	43	25
Brand 3	75	0	25	50	25	50	0	0	0	0	100
Average	59	10	14	19	24	28	0	17	10	29	51
Independent adult											
Brand 1	25	0	0	0	0	0	0	0	0	0	100
Brand 2	20	20	0	0	0	0	0	0	0	0	100
Brand 3	67	67	0	0	0	0	0	0	0	0	100
Average	29	26	0	0	0	0	0	0	0	0	100
Adult no children											
Brand 1	7	0	7	29	14	29	21	7	7	4	44
Brand 2	38	41	37	35	32	30	36	33	31	26	33
Brand 3	39	50	28	11	11	17	22	17	6	17	57
Average	34	37	31	30	26	28	32	26	23	21	38
Single-parent households											
Brand 1	39	34	34	25	14	23	16	23	2	11	71
Brand 2	32	27	36	34	17	19	17	19	19	28	11
Brand 3	8	0	0	0	8	0	0	0	0	8	0
Average	29	23	30	27	15	16	14	16	13	22	21
Household children −6											
Brand 1	13	24	24	9	13	7	7	11	16	7	50
Brand 2	22	22	27	28	23	24	22	8	20	17	24
Brand 3	38	15	15	0	0	8	8	0	15	15	60
Average	24	21	25	21	18	19	17	7	19	15	36
Household children 6-17											
Brand 1	16	16	29	24	11	10	14	10	9	11	31
Brand 2	36	38	35	38	26	29	30	30	27	27	26
Brand 3	33	17	13	17	4	4	21	8	4	8	75
Average	33	31	30	32	20	22	26	23	21	21	35
Household children 17-30											
Brand 1	28	20	30	18	16	16	13	20	20	4	86
Brand 2	41	38	36	34	30	30	34	33	28	40	4
Brand 3	29	25	38	25	33	13	21	25	17	21	29
Average	37	33	35	30	29	25	29	30	25	31	16
Retired											
Brand 1	5	5	0	0	5	5	0	10	5	4	20
Brand 2	36	41	43	39	33	39	39	39	26	33	9
Brand 3	20	20	8	16	12	16	8	16	4	8	60
Average	29	32	30	30	25	30	28	31	19	25	15
Total											
Brand 1	21	20	21	16	11	11	11	13	8	9	58
Brand 2	31	32	31	31	23	26	26	26	24	26	14
Brand 3	26	24	22	18	14	15	16	12	7	10	62
Average	28	29	28	26	20	22	22	22	19	21	26

Source: Authors' own work

Table A6 Quarterly repeat-purchase rates and erosion by social class

| Social Class | % Repeat-Buyers in Subsequent Quarters vs base period Period | | | | | | | | | | Erosion |
	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q3-Q12 as % Q3
Low											
Brand 1	12	11	11	12	7	7	14	7	9	5	57
Brand 2	34	31	35	29	26	25	29	26	23	25	26
Brand 3	29	38	10	19	10	24	33	19	0	10	67
Average	30	29	27	25	21	22	28	22	17	20	35
Middle low											
Brand 1	18	21	28	31	11	20	13	20	11	10	45
Brand 2	31	33	29	31	28	29	24	31	26	24	23
Brand 3	22	7	0	11	11	19	4	7	0	7	67
Average	28	27	24	27	23	26	19	25	19	19	31
Middle											
Brand 1	28	20	26	10	9	11	10	15	10	8	70
Brand 2	35	36	40	36	27	29	30	26	26	32	7
Brand 3	28	28	34	17	11	11	17	17	6	13	54
Average	33	32	37	29	22	23	25	23	20	26	22
High and middle high											
Brand 1	24	22	30	22	20	15	11	13	11	4	83
Brand 2	33	41	35	43	29	32	36	32	31	32	2
Brand 3	38	34	25	22	22	16	22	13	25	25	33
Average	33	37	32	37	26	27	30	26	27	27	17
Total											
Brand 1	21	20	21	16	11	11	11	13	8	9	58
Brand 2	31	32	31	31	23	26	26	26	24	26	14
Brand 3	26	24	22	18	14	15	16	12	7	10	62
Average	28	29	28	26	20	22	22	22	19	21	26

Source: Authors' own work

Appendix 2

Figure A1 Customer erosion depending on family size in period Q12 at the brand level

Erosion in Q12 (%)
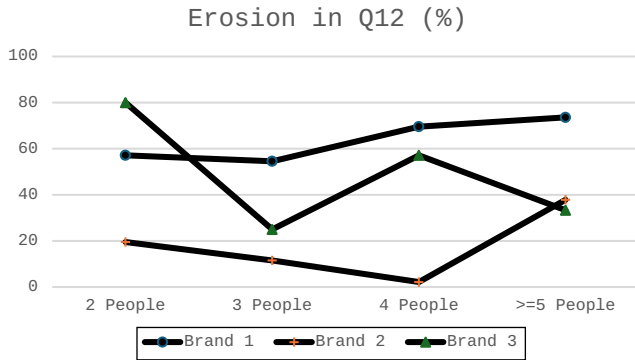
Source: Authors' own work

Figure A2 Customer erosion depending on life cycle in period Q12 at the brand level

Erosion in Q12 (%)
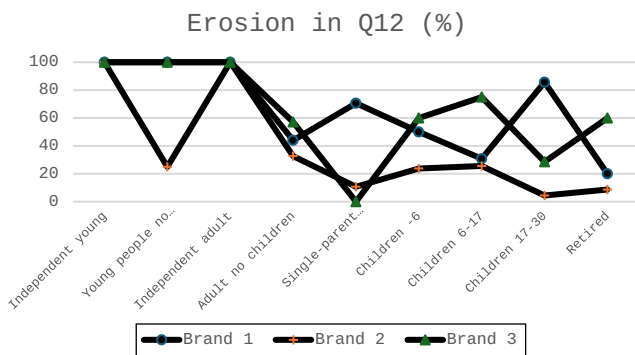
Source: Authors' own work

Figure A3 Customer erosion depending on social class in period Q12 at the brand level

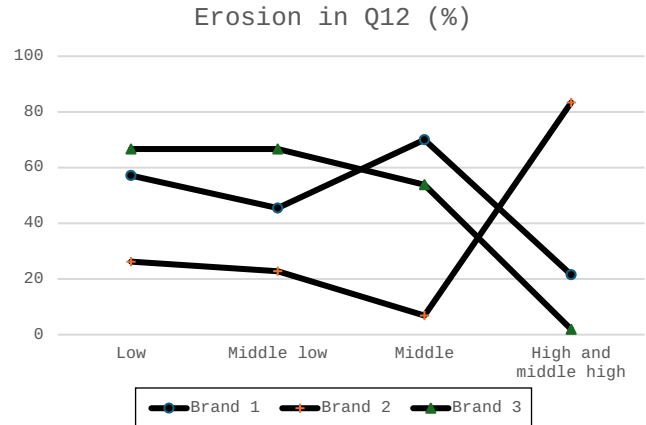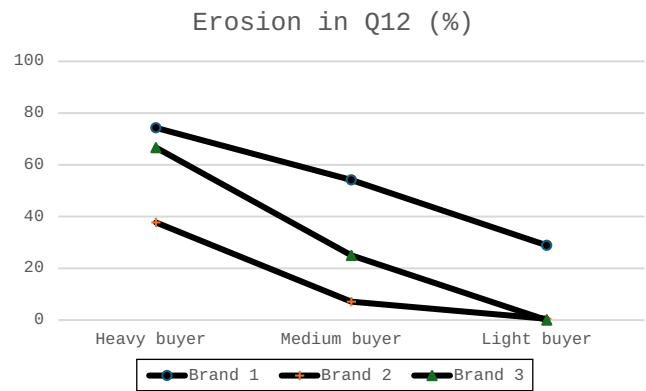### Erosion in Q12 (%)

Figure A4 Customer erosion depending on the weight of purchase in period Q12 at the brand level

Erosion in Q12 (%)

Source: Authors' own work

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