**Predicting Category Growth from Quarterly Penetration**

**Abstract**

Faced with persistent brand share equilibrium, managers now consider category expansion as a brand growth strategy. At present there is little evidence available about the incidence and nature of category dynamics in mature markets, and therefore little to inform decision-making. We report findings from a large-scale study of household penetration change in nearly 400 established consumer packaged goods categories, and show (1) almost two thirds remain near stationary (2) categories over the mean size of 21% are more stable, with lower incidence of increase (or decrease) and relatively small increments (3) smaller categories (under 10% penetration) are extremely volatile, and average change is up to thirteen times greater. Rate of change is closely linked to initial category size, and equally distributed between increase and decrease. The implications for management seem to be that persistent category expansion is rare and a fifty/fifty strategy at best.

***Keywords:*** *Category expansion****,*** *brand share equilibrium,**penetration growth*

***Track:***

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**Introduction**

Category growth is a topic of some interest for brand managers (Yoon, Burchman & Sullivan, 2017) particularly in established equilibrium markets where individual brand share increases are largely non-persistent (Graham, 2009). It is therefore valuable to understand the drivers of category expansion at maturity, and conditions under which it is best achieved. The literature is not well developed here, but since market development has long been measured by product diffusion (Bass, 1969; Rogers, 2010: Fisher & Pry, 1971) we begin to address that gap by describing the incidence and shape of category penetration changes found in nearly 400 established consumer packaged goods (CPG) datasets. Even at maturity, it seems buyer numbers can be a driver of further expansion, and predict something of future dynamics.

**Background**

A category, or product-market is “*the set of products judged to be substitutes, within those usage situations in which similar patterns of benefits are sought, and the customers for whom such usages are relevant.***“** (Day et al.,1979 p.10). Because a category is defined by the perceived closeness of the competition, once all potential buyers are reached, demand for each brand achieves a near-steady state defined by the number of its buyers and the fact that those buyers then satisfy a stable category requirement by switching easily within a small repertoire of familiar alternatives (Ehrenberg, Uncles and Goodhardt 2004). Despite the intense rivalry that results, in which loyalty strategies have little persistent effect (Dawes *et al*, 2017) and household repertoires expand over time (Banelis, 2013;Trinh 2014), managers who face a growth imperative (Day, 2002) are usually advised to expand total category demand (Kotler et al., 2017). If successful, this would benefit all actors in the category marketing channels, with the highest rewards reserved for the brand leader. On the other hand, destabilising category structure leaves the brand leader with the most to lose.

Four drivers of category expansion are normally proposed: attracting new users, promoting new uses, increasing usage and increasing prices. The first, adding new users at maturity, is the focus of this study. It seems intuitively to bear the least risk, but has been the subject of little empirical investigation. Our first aim was therefore to describe the incidence of penetration growth observed over several years across many CPG categories in four different countries. Two further questions then followed. Is penetration growth worth the candle? Price promotions boost penetration without increasing value (Nijs, 2001;Pauwels et al., 2002) while total value could increase without shifting penetration if some existing buyers pay a premium for an innovation (Soberman & Gatignon, 2005). We therefore wanted to confirm a positive association between penetration change and value change. Then, diffusion curves suggest it is easier to achieve category growth at lower levels of penetration than higher therefore brand leaders might more easily drive growth in smaller rather than larger categories. The final question was to describe how, if at all, dynamic penetration is related to category size.

**Method**

To address these questions, the study examined buying metrics from three or five-year panel data collected in France, Germany, the US and the UK. Ten major CPG groups were divided into product categories by commercial management: ambient ready meals (12), cat foods (20), chocolate (3), confectionery (17), dog foods (9), speciality foods (11), gums (2), ice creams (10), rice (14) and cooking sauces (5). Our primary interest was in penetration change. To account for seasonality, quarterly values were first established as the mean of four quarters in an initial and subsequent years and growth or decline then recorded for the 389 datasets. To establish the relationship between category size and penetration change, initial penetrations were tiered (0-10%, 10% to 20% *etc*) and the distribution of mean absolute change within each decile described with its range and standard deviation (Table 1).

**Results & Discussion**

Category penetration varied between 1% and over 90% with an average of 21% and mean purchase frequency of 2.5. Incidence of significant change was relatively rare but distributed near-equally between growth and decline. A quarter of the sample remained within 1%, and two thirds within 5% of initial size each year but persistent decline (over 5% ***in each*** year) was identified for just 7% of categories, persistent increases in 8%. Growth categories were on average half the size initially (9%) of declining (19%). Second, changes in category value were found to be highly, although not perfectly, associated with increases (*r* = 0.68) and decreases (*r* = 0.67) in household penetration, thus the number of category users in any given period is not the only factor driving value growth but is important to category expansion.

Table1.The incidence and extent of quarterly category penetration change from an initial quarter.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Initial Pen %**  | **0-10** | **10-20** | **20-30** | **30-40** | **40-50** | **50-60** | **60-70** | **70-80** | **80-90** | **90+** |
| Avg change %  | **13** | **5** | **4** | **4** | **3** | **2** | **1** | **1** | **1** | **0** |
| SD | 22% | 7% | 7% | 6% | 4% | 2% | 2% | 1% | 1% | 0% |
| Max | 143% | 25% | 35% | 20% | 7% | 5% | 2% | 2% | 2% | 0% |
| Min | -25% | -14% | -22% | -8% | -14% | -4% | -3% | -2% | 0% | 0% |

Third, bigger categories are less volatile. The more buyers a category has, the lower the incidence of increase (or decrease) and the smaller any relative change. Rate of growth is negatively correlated with initial size (*r* = - 0.44), and rate of decline similarly but positively, correlated (*r* = 0.48). Our tiering analysis found that small categories (penetrations under 10%) showed dramatic average change in size, with movements in double digits, three times the level of change in categories reaching 10% to 20% of households and thirteen times the level in categories bought by over half the population. Regularities identified across many sets of data begin to take on law-like properties. The relationship between category size and quarterly growth or decline is almost normally distributed and so therefore quite predictable.

**Implications for Theory & Practice**

The study has opened up the empirical exploration of behavioural regularities and norms underlying category expansion and decline, establishing a foundation for further research. First, we establish managerial benchmarks: few categories grow at all, but size defines the relative ability to grow. At the average penetration of 21% quarterly change is in the region of 4%. For bigger categories this drops to relative change of one or two points. Significant expansion of major categories appears unlikely. Smaller categories are more volatile, but include premium innovations (e.g. frozen pet food) and functionally different product forms (mint *vs.* gum confectionery). For managers, it will therefore be important to understand the degree to which different types of sub category can bring new buyers into the total product field and/or increase value from existing buyers. We note that a relative change of 1% in buyers of a large category represents the equivalent of a 10% shift in a small sub-category – the same absolute buyer numbers. Our evidence might imply that the best route to total category expansion is through a sub-category bought by some people some of the time, so a duplication of category purchase analysis would establish the most effective combination of price, type and size. Finally, category expansion strategies carry high risk. When penetration changes, the chance of failure is evens for instigating brands and for their challengers. More work is needed to understand the buyer flow drivers that determine total category growth.

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