Where does sales revenue growth come from ?

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Abstract

In this paper we examine the degree to which growth in sales revenue comes from increased size of customer base or from loyalty (higher rates of buying frequency). The famous 'Double Jeopardy' pattern shows that when brands are fortunate enough to rise to a higher market share position they gain sales revenue from *both* gains in buying frequencies and gains in size of customer base. We used the Dirichlet model to determine the slope of the Double Jeopardy line for a variety of product categories covering several countries. We then used this to calculate what an increase in market share would mean for various brands' loyalty and penetration, and in turn what each means for revenue. It turns out that when brands grow, they can expect most of their sales revenue growth to come from having a larger customer base, rather than from the increased buying rate. Large brands are the most likely to be exceptions to this finding because they have little room left to gain from penetration (as almost everyone is already a customer). However, we found in real world markets that even for most market leaders, with already very high penetration levels growth in sales revenue still comes more from penetration rather than loyalty. This little known fact has important implications for marketing strategy, planning and goal setting.

Introduction

It is an under appreciated fact, even amongst those familiar with the work of Ehrenberg and Goodhardt and the 'Double Jeopardy' law, that brands of differing market share differ mainly in terms of the size of their customer base. That is, compared to their smaller competitors larger brands have *many* more customers who buy them *somewhat* more often.

This suggests that sales growth comes mainly from growth in the size of the customer base. But is this usually correct? An increase in buying rate from a large mass of existing customers might be worth a great deal.

This is an issue of great interest to marketing practitioners. Should a firm look to grow through expanding the size of their customer base (concentrating on acquisition) or by encouraging higher rates of buying frequency (concentrating on loyalty)? Textbooks somewhat incorrectly suggest that these are two alternative paths to growth. And lately it has become fashionable to admonish marketing practitioners for supposedly concentrating largely on one path – acquisition(Kotler, Armstrong et al. 1998). Many authors have claimed that the loyalty route to sales growth is cheaper (though we know of no actual evidence to support this). However, Double Jeopardy shows that it is quite wrong to assume that a brand can grow from either acquisition or loyalty. Instead it shows that brands, when they do grow, increase in both (Ehrenberg, Goodhardt et al. 1990). In this paper we examine to what degree growth in sales revenue comes from acquisition or from loyalty.

Method

Our approach is simple. We examined individual brands, both large and small, we calculated what would happen if they were fortunate enough to move up a little along the Double Jeopardy line (i.e. increase in market share). We calculated the Double Jeopardy line by fitting the Dirichlet model (Goodhardt, Ehrenberg et al. 1984) to a series of real data sets covering different product categories and markets.

The reason that Ehrenberg (2000) writes that brand growth is largely a function of size of customer base rather than purchase frequency is that the penetration statistic usually varies many fold more than the average purchase frequency statistic. As is evident in Table 1, where there is a difference in penetration from the smallest brand to the biggest brand of a factor of around 170 (penetration of 34 cf 0.2). Whereas, the difference in average purchase frequency only varies by a factor just greater than 1 (purchase frequency of 3.6 cf 2.7).

However penetration varies less if relative penetration is used rather than penetration amongst the entire population (which includes non-buyers of the category). Also a "many fold" calculation depends substantially on the level of penetration of the smallest brand used in the calculation (eg, if it has 50% penetration then the largest that penetration can vary is two-fold; if it is 5% then larger brands can have up to 20-fold greater penetration). In order to avoid this issue we converted these brand performance statistics (relative penetration and loyalty) into one standard (and very practical) measure namely sales revenue (or units sold). Thus we compare how many dollars of increased sales revenue comes from the revenue gained from higher rates of buying frequency compared with the revenue gained from having a larger customer base.

Table 1 – UK Toothpaste Market 1991

Brands	Market Share	Absolute Penetration	Relative Penetration	Share of Category Requirements	Avg Purchases Brand	Category
Colgate	22	34	**40**	**38**	3.6	9.5
Macleans	11	22	**26**	**32**	3.2	10.0
Crest	10	22	**26**	**31**	3.1	10.0
Aquafresh	9	20	**24**	**30**	3.1	10.1
Sensodyne	6	11	**13**	**29**	3.0	10.2
Mentadent	5	11	**13**	**28**	2.9	10.3
Signal	4	11	**13**	**28**	2.9	10.3
Gibbs	4	11	**13**	**28**	2.9	10.3
Sainsbury	4	8	**10**	**28**	2.9	10.3
Superdrug	3	5	**6**	**27**	2.8	10.4
Boots	2	6	**7**	**27**	2.8	10.4
Ultrabrite	2	6	**7**	**27**	2.8	10.4
Tesco	2	4	**5**	**27**	2.8	10.4
Euthymol	1	2	**2**	**26**	2.8	10.5
Zendium	0.1	0.2	**0.2**	**26**	2.7	10.5

The degree of gain which comes from penetration compared with loyalty depends on the brand's initial level of penetration and loyalty. Small brands with low penetration have more to gain from penetration. This can be seen in Table 1. As Euthymol has only 2% penetration (a small customer base) to start with, a 1 point gain in penetration is 50% of its customer base, whereas Colgate has 40% relative penetration, so a 1 point gain in penetration is a tiny proportional increase in its customer base[1].

With this in mind we analysed small, medium and large share brands.

Results

We analysed 25 datasets which included 12 different product categories. The findings were very consistent. If any brand were to increase somewhat in market share then more of its sales gain would come from growth in the size of their customer base. Here we provide examples of our results.

We used relative penetration rather than absolute penetration which excludes non-buyers from the category[2]. The toothpaste market (Table 1) has a category penetration of 84%, so only approx 1 in 5 people don't buy from the category. For illustrative purposes, we use Share of Category Requirements (SCR)as our loyalty measure rather than the more traditionally used

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[1] The $w(1-b) = w_0$ model compares the buying behaviour of one brand to another in the category. It shows that for really small brands the difference for the w_0 constant is negligible (Ehrenberg and Uncles 2000)

[2] Some non-buyers in any period are just light buyers (indeed for datasets covering short periods the majority of 'non-buyers' can be simply light buyers). This means by using relative penetrations our test somewhat under reports the relative importance of penetration gains, and is hence a stronger test of our main finding.

Double Jeopardy statistic of average purchase frequency because, like the penetration statistic, SCR has a maximum value of 100%. Both loyalty measures of SCR and purchase frequency are highly correlated as can be seen in Table 1, as the purchase frequencies increase so does the SCR. Using the SCR statistic instead of the buying rate does not alter the results in any way.

We used the Dirichlet theoreticals to calculate the loyalty statistic SCR. The use of theoretical figures removes some of the sampling error associated with panel data.

The following graph shows the Double Jeopardy line for one category. The equation of the line was calculated at $y = 25.501e^{0.0086x}$ ($R^2 = 0.95$). This was calculated by undertaking regressing the relative penetration parameter against the SCR parameter, with relative penetration on the x-axis and SCR on the y-axis. Calculus was used to evaluate the slope of the tangent at any particular point along the line.

Figure 1 – An example of the Double Jeopardy line
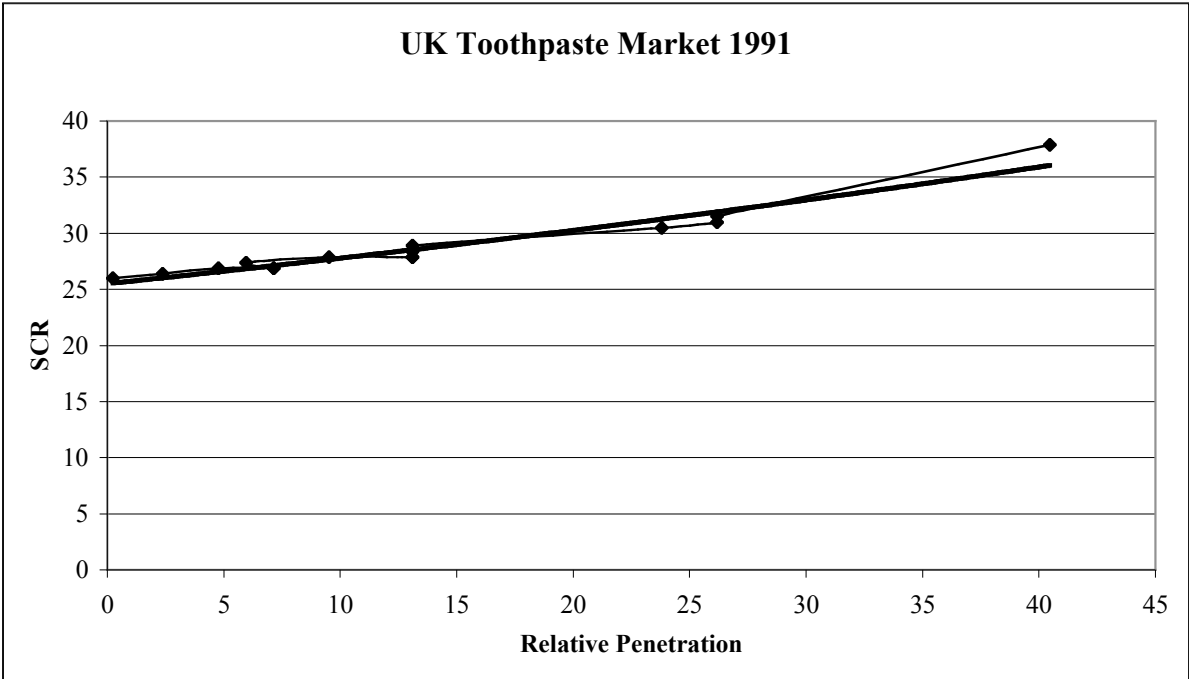
Using the Double Jeopardy line, we can evaluate a market share gain (movement toward the right along the DJ line) comparing how much of the dollar increase in sales revenue comes from the increased buying frequency as opposed to from having a larger customer base.

In this example we have chosen to use Colgate, the largest individual brand in the category, Signal, a medium sized brand, and Euthymol, which is a small brand in the UK toothpaste category.

If Euthymol were fortunate enough to increase market share somewhat, the DJ line shows that each percentage point gain in loyalty (SCR) would be associated with a corresponding 4.5 percentage point gain in penetration. If we assume that there are 1000 customers in the total market (whatever number we assume has no effect on our finding) then Euthymol's gain in market share would mean 2 extra sales from an increased rate of buying frequency and 125 extra sales by growth in the size of the customer base.

The calculation would be thus: presently, Euthymol has 20 customers (if we assume there are 1000 people in the market)who buy their product 2.8 times a year. This equates to 56 sales (20 x 2.8) per year. To calculate the 1 percentage point increase in SCR, we know that all the customers who buy Euthymol buy from the category 10.5 times. So a 1% point increase equates to 1% of 10.5, or 0.105. Euthymol has 20 customers, so this equates to 2 new packets being sold (20 x 0.105).

As Euthymol moves up the Double Jeopardy line with a rise of 4.5[3] percentage points more of penetration, this would equate to a growth of 44 to the size of the customer base. This increase in the size of the customer base results in 125 more sales (44 x 2.8).

So by moving up the Double Jeopardy line, with an increase of 1 percentage point to the buying frequency and 4.5 percentage points to the size of the customer base, Euthymol could expect that for every new sale that is from an increase in the buying rate, Euthymol will gain roughly 60 extra sales through an increase in the size of the customer base.

Note we multiply the increase in size of customer base by the old rate of purchase frequency rather than the new rate. Consequently we do not entirely account for the full sales gain. We do so because we are treating loyalty and penetration gains as completely separate, whereas Double Jeopardy tells us both occur simultaneously. The small amount of unaccounted increase can not uncontentiously be considered purely a "penetration gain", so we do not include it otherwise we might be accused of overstating the penetration gain.

For the medium sized brand Signal, they gain 13 sales through the higher buying rate and 122 sales through the growth of the size of the customer base. So Signal could expect roughly 9 more sales from an increase in the size of the customer base for every 1 extra sale due to an increase in the buying rate.

As our general finding is that sales gains are due more to growth of the size of the customer base rather than increased rates of buying frequency, the most interesting group are the large brands because these are the most likely to buck this pattern. That is, larger brands will receive proportionately more from increased buying rates than small brands. Yet we found that even for Colgate (a very large, dominating brand in the UK toothpaste market) that if it were to increase its market share, somewhat more of the dollar gain in sales revenue would come from growth of the size of the customer base than from higher rates of buying frequency. In the case of Colgate, a 1 percentage point increase in loyalty equates to 38 new sales, whilst the expected gain in penetration translates to 116 more sales. Colgate could therefore expect for every 1 sale due to an increase in the buying rate that it would gain a further 3 new sales due to the increased size of its customer base.

As any given brand moves from point A up the double jeopardy line to point B on the line, the slope of the tangent at that point of the double jeopardy line increases. This means that as brands move along the line, an increasing proportion of their gains in sales will be realised from increases in buying frequencies. Very large brands will gain proportionally more from

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[3] The equation of the Double Jeopardy line is $y = 25.501e^{0.0086x}$. To calculate the slope of the tangent at this point requires integral calculus. Therefore where the relative penetration for Euthymol is 2, the slope of the tangent is 4.5, meaning that every 1 percentage point increase in the buying rate (SCR) results in a 4.5 percentage point increase in the size of the customer base.

loyalty than will smaller brands. However our empirical results show that for most real world brands increases in sales will be mostly through growing the size of their customer base.

Even for very big brands, like Coca Cola, increases in the size of the customer base will result in more sales than through higher rates of buying frequency. In our UK soft drink dataset Coca-cola has a whopping relative penetration of 74%, and an average buying rate of 12. Even from this position if Coca-cola were to gain additional market share its sales growth would more from growing the size of the customer base than through increased buying rates (461 sales c.f. 350). Therefore for every 1 new sale from an increase in the buying rate, Coca-Cola can expect roughly 1.3 sales due to its increased the size of customer base.

We have found only one exception so far. This exception was the super dominant brand Walkers in the UK Snacks market. With a relative penetration of 81%, which is more than twice of its nearest rival, and purchase frequency of 12.6, slightly more of Walkers sales growth would be realised through increased buying rates than from growth of the size of the customer base (210 sales c.f. 172 sales).

Discussion

Our findings are clear, when one looks at typical repeat-buying data sets (eg, as supplied by commercial panel operators such as AC Nielsen and TNS) they show that growth for existing brands will come largely from penetration rather than loyalty. However, from a theoretical perspective if the time period were extended sufficiently for these datasets such that every brand had very high penetration levels then our finding would have to be reversed – simply because there would be no room left for penetration gain. Similarly a manager taking a very long term historic perspective might consider nearly every buyer to be a customer, and thus would see loyalty as the only route to growth: "we have to get our customers to buy more often". This thought experiment (or shift in perspective) actually does nothing to change our finding, the same underlying phenomenon must be occurring and that is that gains in market share come mainly from light buyers of the brand increasing their propensity to buy it. The reason that light buyers have such an effect is because there are so many of them. In the normal time periods that managers study this increased buying propensity will show itself largely in the penetration statistic; many more customers buying at least once in the analysis period. Over very long time periods (or for brands with already very high penetration) it shows itself instead in the loyalty statistics.

This is because penetration and loyalty are not really independent statistics, they are both due to customers' propensity to buy the brand. However, it is usually managerially useful to think of them as separate, as we have done in this paper.

Implications

Managers should not forget, especially when being sold/told of the benefits of loyalty marketing, that if their brand does grow then most of the sales gain will likely be due to increasing the size of their customer base. Growth in market share appears unlikely to come about from marketing efforts that focus on increasing the buying rate of existing or heavy customers. Growth in market share has much more to do with the buying propensities of light, occasional buyers of the brand who in most periods of analysis are rightly considered to be non-customers. Growth oriented marketing should focus on converting these 'non-customers' into customers.

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