# Loyalty Programs and their Impact on Repeat-Purchase Loyalty Patterns: a replication and extension

Byron Sharp and Anne Sharp

Marketing Science Centre

University of South Australia[1]

## Abstract

We evaluated the effect of a loyalty program in terms of its ability to alter normal repeat-purchase patterns and move a brand into an "excess loyalty" position.  In doing so we replicate the work of (Sharp and Sharp, 1997) and extend the research by examining an almost identical loyalty program but in a more "promotion sensitive" market (and in a different country) and where a retaliatory price promotion ran in competition to the loyalty program.  We were therefore able to examine the differing effects of a loyalty program and a price promotion on repeat-purchase behaviour in the same market.  As expected, we observed a stronger "excess loyalty" effect for the loyalty program than (Sharp and Sharp, 1997) recorded.  This was in spite of the competitive price promotion.  The loyalty program appeared to insulate the loyalty program brand from the effect of this promotion.

Interestingly, the price promotion also generated excess loyalty but less than the loyalty program.  The price promotion generated a greater, but temporary, market share gain. Both marketing interventions appear to be quite defensive in nature, encouraging buying by existing buyers.  This is in contrast to interventions that achieve "normal", permanent market share gains which are primarily based on increases in penetration, ie numbers of customers.  This result supports other empirical work that suggests that promotions attract existing customers, they are defensive and reinforcing which is in contrast to a popular view that promotions at best attract new trials and at worst harm the loyalty of existing customers.

---

[1] Authors' contact address is Marketing Science Centre, GPO Box 2471, Adelaide, South Australia 5001. Australia Email Byron.Sharp@msc.unisa.edu.au Telephone: 61 8 8302 0715  Fax: 61 8 8302 0123

The replication results support the original study's method of using existing empirical generalisations, and theory that captures these generalisations, to provide a benchmark against which the impact of these interventions on repeat-purchase could be assessed. The difference in strength of impact suggests that brand and price differentiation have a strong influence on the impact of loyalty programs.

# 1. Introduction

In spite of a great deal of practitioner interest in loyalty programs there is only a very small body of academic literature dealing with their potential impact and how they might be evaluated. Most articles are normative, dealing with opinions concerning their potential value (or lack of) and how they should (and should not) be implemented (eg Uncles, 1994, Dowling and Uncles, 1997, O'Brien and Jones, 1995). Empirical investigation of loyalty programs has been limited by the difficulties in obtaining panel data in markets where loyalty programs have been introduced (see East and Hogg, 1997 for some ingenious work to get around this problem). Researchers have also encountered the practical problem of the difficulty of constructing classic experimental designs which require a control benchmark, either in terms of a set of consumers not exposed to the loyalty program, or data on what buying behaviour was like prior to the program launch. Sharp and Sharp (1997) presented a quasi-experimental methodology based on using the established empirical generalisations (captured via the Dirichlet model) of repeat-buying behaviour to provide a natural benchmark, against which changes in repeat-purchase loyalty could be assessed, brand by brand. This method has the advantage of not requiring data on individuals' repeat-buying habits prior to the loyalty program launch.

Their research examined the impact of a loyalty program operating in three product categories. Their results showed some weak "excess loyalty" effects. We adopt their methodology to assess a loyalty program operating in a market that was known to be more promotion sensitive due to a lack of product or price differentiation between brands. We also report on the comparative effects of a price promotion that operated in retaliation to the loyalty program.

## 2. Loyalty Programs and Repeat-Purchase Loyalty

Loyalty programs are presumably initiated by marketers in an effort to achieve some sort of financial pay-off or strengthening of their long-term competitive position. Financial returns depend on increases in market share and repeat-purchase loyalty (which is known to increase (decrease) as a brand's market share increases (decreases) (Ehrenberg et al., 1990, Ehrenberg, 1988), or increases in the degree of insensitivity customers have towards competing offers (Sharp, 1998). In this paper we concentrate on assessing the former, we do not deny that some loyalty programs may be initiated in order to increase differentiation loyalty, raising barriers to

entry for new brands and allowing firms to benefit through mechanisms such as price rises. However, in the market that we investigate (retail fuel) marketing attention is far more concerned with market share changes, and in this very frequent repeat-purchase market, it is doubtful that an increase in differentiation loyalty could occur without an accompanying increase change in repeat-purchase loyalty.

While most marketing activity for established brands is defensive, its primary purpose being to maintain current market position and revenue flows, marketers often initiate interventions with the objective to generate sales gains. That marketshare gains seldom occur is due to the fact that competitors are also intervening in the market, marketers must "run hard to stand still" {Ehrenberg, 1997 #5605}. This noted, it is no exaggeration that few would have considered the loyalty program we evaluate here as being successful if it had not produced a sales gain. Like most mass market loyalty programs it was a very expensive marketing intervention, involving considerable set up and on-going running costs. A sales gain was necessary in order to recover these costs. So the loyalty program was launched with the expectation that it would increase the purchase loyalty of customers, as well as possibly attracting some new buyers, and overall bring about increased sales and marketshare. We investigated the nature and degree of this marketplace performance.

## 2.1 Dirichlet Benchmarks

The traditional approach to assessing the impact of marketing interventions is to use either a control market or comprehensive "before" data. Both these approaches have considerable practical problems, particularly when it comes to assessing the impact of a mass market intervention such as a loyalty program. An alternative is make use of the known empirical generalisations concerning the repeat-purchase patterns in stationary or near stationary markets (which is most markets most of the time). The Dirichlet model of repeat-purchase behaviour is capable of providing estimates of the repeat-purchase patterns for a stationary competitive repertoire market, and can do so from just a few inputs. By providing brand-by-brand estimates of expected performance if the market were stationary, it can be used to assess non-stationarity for particular brands that have initiated major marketing interventions. Thus, Dirichlet can be used to provide a natural benchmark against which the impact of a loyalty program can be assessed. Sharp and Sharp used this methodology to examine a major loyalty program in Australia (1997). Ehrenberg, Hammond and Goodhardt (1994) used a somewhat similar approach to assess the after effects of price promotions in the United States. The approaches differed from one another in that Sharp and Sharp fitted Dirichlet to a market "in the grip" of a loyalty program, whereas Ehrenberg and colleagues fitted Dirichlet to a stationary market before the price promotion and then compared predictions to observed patterns post promotion. Ehrenberg and colleagues did not report on the nature of the market

*during* the price promotion, other than the fact that there was a dramatic temporary sales spike (indeed it was this spike that was largely used to infer that a sales promotion had occurred). In this paper we adopt Sharp and Sharp's approach in that we compare the current market directly to Dirichlet estimates (of stationary behaviour) fitted on that market. We examine two non-stationary brands, one operating a loyalty program and the other a price promotion.

The advantage of Dirichlet benchmarks is that they allow market share changes to be dissected into their component parts of gains/losses in repeat-purchase loyalty and gains/losses in numbers of customers. The ability to disaggregate marketshare like this is particularly useful for examining a loyalty program, since we are expecting the program to impact more on loyalty and less on customer acquisition. Thereby deviating from the normal relationship observed between penetration (number of customers) and purchase loyalty.

Normally the differences between large and small share brands show up primarily in terms of differences in numbers of customers (Ehrenberg, 1988); small brands have far fewer customers than large brands. They also have lower repeat-purchase loyalty, ie their customers buy them less often (the famous Double Jeopardy effect McPhee, 1963, Ehrenberg et al., 1990) but this difference is of a much smaller magnitude than the differences in numbers of customers between large and small brands (Ehrenberg and Uncles, 1997). It follows, therefore, that when a brand moves to a higher market share position it gains a lot more customers and also experiences a smaller gain in repeat-purchase loyalty. Little is known about how this happens, that is, whether the brand attracts some heavier than average buyers or whether existing customers buy more (East, 1997). Little is also known about the non-stationary period before a brand settles down in its new higher market share position. Does a brand move smoothly along the "double jeopardy line", or do existing customers begin buying more (raising repeat-purchase loyalty) before word of mouth and demonstration effects, amongst other things, attract new buyers, or does marketing effort attract new buyers who trial the brand (raising penetration) and then gradually add the brand to their repertoire lifting repeat-purchase loyalty ? This paper attempts to shed some light on these dynamics, at least in terms of the temporary market share gain caused by promotions and the more lasting sales effect of a loyalty program.

## 2.2 *"Excess Loyalty"*

In line with the reasoning and findings of Sharp & Sharp (1997) we expect a loyalty program, if it has an impact on buying behaviour, to bring about "excess loyalty" for a brand. The brand will show an excess of repeat-purchase loyalty for its level of penetration (number of customers), or put another way, will show a deficit of penetration for its level of repeat-purchase loyalty. Such an effect may or may not be accompanied by an increase in market share, the

former being more probable[2].  For more on "excess loyalty" see (Sharp and Sharp, 1997, Fader, 1993, Kahn et al., 1988).

## 3. Survey Methodology

The findings of this research are based on a panel survey of 592 respondents who provided complete details of their retail fuel purchases for each week of the 10 weeks prior to 15 December, 1996.  The data was collected by telephone every week using IQCA (Interview Quality Control Australia) interviewers.

Panel members were recruited prior to the loyalty program launch.  The recruitment intervews allowed pre-loyalty program launch market shares to be calculated, these compared very well against industry reported market shares, which were based on litres of petrol pumped/sold.

This panel began just after the launch of the loyalty program in New Zealand.  The sample consisted of adult (18 years old and over) New Zealanders, not working in the market research or advertising industries, who held a drivers licence and owned or had access to a car.  The loyalty program under evaluation offered points to shoppers for brand patronage that could be redeemed for free air travel or accommodation.  34% of the sample were members of the loyalty program at the start of the 10 week period and a further 12% joined during the panel period[3]. All comparisons in this report between program members and non-members exclude the group who joined sometime during the 10 weeks of the panel.  This may potentially dampen the differences between these groups but as will be seen the differences actually turn out to be stark, certainly sufficient to support the notion of attributing causality to the loyalty program.

---

[2] A loyalty program might even have the effect of reducing penetration in that lighter buying customers see no benefit in the loyalty program which requires them to make many purchases in order to gain reward and may instead be attracted by the promotions of competing brands.  The overall result, even if the loyalty program brought about an increase in average purchase frequency, therefore might be no or very little movement in marketshare

[3] A total of 45% of panel members were loyalty program members by the end of the panel.  This is higher than loyalty program membership levels recorded by Sharp & Sharp for a very similar loyalty program.  However, it appears to concur with figures presented by the managers of the loyalty program when commenting on the success of the loyalty program up-take in New Zealand.  The high figure therefore appears mainly due to the extra-ordinary success of the program in recruiting members, as well as being partly due to the panel being skewed to adult members of the population who are in the market for products involved in the loyalty program.  This fortuitously enahnces our ability to administer one test of causality, that is to compare samples of program members and non-members.

## 4. The Marketing Interventions

The retail petrol market in New Zealand at the time of the loyalty program launch was quite different from the market Sharp and Sharp studied in Australia. The market was completely dominated by four brands (BIG, LOYPRO, PROMO, and SMALL) with independent petrol stations being almost non-existent. In Australia, minor brands and independents often positioned themselves as discounters. Whereas the concept of a petrol discounter did not exist in the New Zealand market. Supermarkets also did not offer retail petrol outlets as they do in other countries (eg see Shingleton, 1998). Profit margins, at the time, were higher in New Zealand than Australia. The four petrol companies were publically accused of monopolistic behaviour and there was some public pressure for the government to encourage new entrants into the market, which happened some time after this research was conducted.

There was little product or price differentiation between brands. The main differentiating features were between individual outlets, that is, difference in location, type of accompanying food store, presence or absence of carwash, etc. Consequently the market was well known to be brand promotion sensitive. Marketers at each of the four petrol companies could achieve quite substantial temporary sales gains for their brand through the promotions, these usually featured discounts on non-fuel products (eg Coca-cola), competitions, or giveaways (eg free drink glass with every fuel purchase) rather than discounting.

In the post loyalty program period one brand (PROMO) ran a series of "back-to-back" promotions, some were price discounts and some were "softer" promotions. The market leader (BIG) did nothing. The result was temporary upwards sales spikes for the promoting brand but, as will be seen, it did not steal sales from each competing brand as would be expected. We attribute this effect to the presence of the loyalty program.

## 5. The Predicted Effects

It is a well established scientific principle that data does not speak for itself but rather, should be interpreted within a theoretical framework (Chalmers, 1976). In this case the Dirichlet theory of repeat-buying (Goodhardt et al., 1984), which has been subjected to extensive and rigorous testing across markets and time, provides an interpretive guide. Dirichlet norms, fitted to this market and this particular 10 week period, provide a baseline from which results can be interpreted. This baseline allows the effects of many marketing actions to be examined in some detail. Dirichlet allows a comparison to be made between what actually happened with what would have happened without the marketing intervention(s).

An alternative methodology to evaluate such an intervention would be to conduct controlled experimentation, with the marketing intervention run in certain regions of the country and compared with "control" regions, the whole exercise being subjected to the principles and procedures of statistical experimentation. But imposing effective experimental control in marketing is usually very expensive, often difficult (due to competitors' activities or other variable factors), and sometimes altogether impossible (as in this case where control sites would not have been possible) (Ehrenberg, 1988 p.104). Furthermore, controlled experiments have to be planned in advance which requires prior knowledge of the loyalty program's intended implementation which is often unavailable to those outside of the company introducing the loyalty program.

A competitive repeat purchase and near stationary retail fuel market will fit Dirichlet patterns of repeat-purchase. That is, each brand will behave as it should in terms of repeat-purchase statistics (penetration, average purchase frequency, proportion of repeat-buying, etc). A market that has been successfully disrupted by some marketing activity (ie is not stationary) will not fit perfectly, it will show deviations and these can be used to evaluate the impact of the program.

We would expect that if a loyalty program was effecting changes in buying behaviour then this would be seen as upward deviations in repeat-purchase loyalty statistics and downward deviations in penetration for the brand that runs the loyalty program. Naturally if we wish to attribute causality to the loyalty program we would expect to see this effect confined to the loyalty program members. The expected downward deviation in penetration is not to say that the loyalty program brand would necessarily actually lose customers, that is, drop in penetration, though it might (see earlier footnote). We expect a downward deviation in penetration (a deviation from Dirichlet predictions) because we expect penetration to be out of kilter with the growth in repeat-purchase loyalty. That is, the penetration growth, if there is any, should be less than would be expected given the corresponding increase in repeat-purchase loyalty. Normally brands with high, relative to competitors, repeat-purchase loyalty have very high penetration, ie they are large share brands. This is the "upside" of the famous Double Jeopardy effect (Ehrenberg et al., 1990). Brands showing excess loyalty have too much purchase loyalty for their penetration level, or put the other way round, their penetration level is too low for their level of purchase loyalty[4].

It is more difficult to form expectations concerning the marketplace effects of promotions. It is known that promotions, particularly price promotions, can cause quite dramatic sales increases. So promotions make a brand temporarily look like a larger share brand, thus it might be expected that promotions should produce large increases in penetration and small gains in

---

[4] A before and after research design would allow us to easily see if any "excess loyalty" position was due to an increase in purchase loyalty or a decrease in penetration. In this research we do not dissect excess loyalty we simply record it.

average purchase frequency, this is in line with the observed difference between a brand and any larger share brand. However, promotions produce only temporary marketshare increases, the increase disappears once the promotion finishes, and promotions typically run for short periods which may preclude some marketplace effects. It appears that there is little or no residual effect post-promotion, which has been put down to evidence that promotions mainly attract existing buyers rather than inducing trial by new customers (Ehrenberg et al., 1994). This would suggest that promotions may receive their sales gain in terms of excess loyalty instead of substantial penetration gains. However, exactly the opposite has be argued (Kahn et al., 1988 state that a brand might show deficit loyalty or "change of pace" if it ran promotions during the panel period) and there is uncommon for marketing textbooks to associated promotions with increases in loyalty, no matter how temporary.

In summary, little is known about the marketplace dynamics which occur as brands change marketshares (East, 1997), this research provides some initial data in respect to promotion driven sales spikes.

## 6. The Results

### 6.1 Market Share Changes

Before examining whether or not the loyalty program has brought about "excess loyalty" (ie disrupted normal repeat-purchase patterns) we look at the market share movements that occurred. Sharp & Sharp (1997) did not report on market share shifts, but rather they argued against using market share as a measure of loyalty program success/failure, noting that (a) "excess loyalty" is possible without any, or a very small, marketshare gain, and (b) loyalty programs are inherently defensive appealing to existing and heavier buying customers so they should not be expected to have any marked degree of impact on penetration. East however argues that a loyalty program might still bring about some degree of penetration gain and that this could actually reduce the degree of "excess loyalty" observed in terms of Dirichlet deviations (any gain in average purchase frequency would look like less of a deviation if penetration also rose). Thus it may be important to look at market share movements, particularly for the loyalty program brand.

The actual effect of the loyalty program on market share is difficult to assess within a short period. However, if examined carefully, these panel figures do throw substantial light on the topic. The market shares before and after the loyalty program launch are shown in table one below. The pre-launch market shares are calculated using a matched sample, that is, the same respondents who participated in the full ten weeks of the post-launch panel. This effectively

removes sampling error in making comparisons between the two sets of marketshares. The pre-launch figures are derived from probabilistic estimates of buying behaviour a method shown to produce very accurate aggregate level sales statistics (see Wright et al., 1998, Brennan and Esslemont, 1994).

**Table one: market shares pre and post loyalty program launch**

|  | Market Share before the loyalty program launch | Market Share post loyalty program launch (the panel period) |
|---|---|---|
| LOYPRO | 32% | 30% |
| PROMO | 21% | 28% |
| BIG | 32% | 26% |
| SMALL | 15% | 16% |

*The brand on promotion jumps in market share.*

We observe no gain in marketshare for the loyalty program brand (LOYPRO) during the period the panel ran, but it does move to the number one rank position due to changes in the shares of the other brands. The brand on heavy promotion during the period (PROMO) posted a substantial marketshare gain, largely at the expense of the market leader (BIG) while the smallest brand in the market (SMALL) appears to have held its ground, due perhaps to its own smaller promotion.

The five percentage points in marketshare that PROMO gained from other brands should have come from SMALL (one point), BIG (two points) and LOYPRO (two points) according to the Duplication of Purchase law, which has been shown to predict marketshare gains/losses in non partitioned markets (see Lomax et al., 1996). Whereas we observe that SMALL did not lose any share but rather gained, so BIG and LOYPRO should have lost even more. LOYPRO though lost only the 2 points it should have because of PROMO's gain, while BIG lost six percentage points of share when it should have only lost little more than 2 points. These differences could be due to slight partitioning in the market (as well as errors associated with the individual measures) but are more likely to be due to the marketing interventions, or lack of intervention on BIG's part.

Graph one below reports weekly marketshares, sales for each brand were calculated by multiplying penetration by average purchase frequency. On a week-by-week basis LOYPRO is fairly consistently in the market leadership position, PROMO has a strong run for several weeks then falls back somewhat, the chart reveals the sales impact of PROMO cycling through its different promotions. BIG sits in 2nd or 3rd position, depending on the week, and SMALL is consistently the smallest brand. Week by week variation in terms of rank positions is fairly minor, except for PROMO.
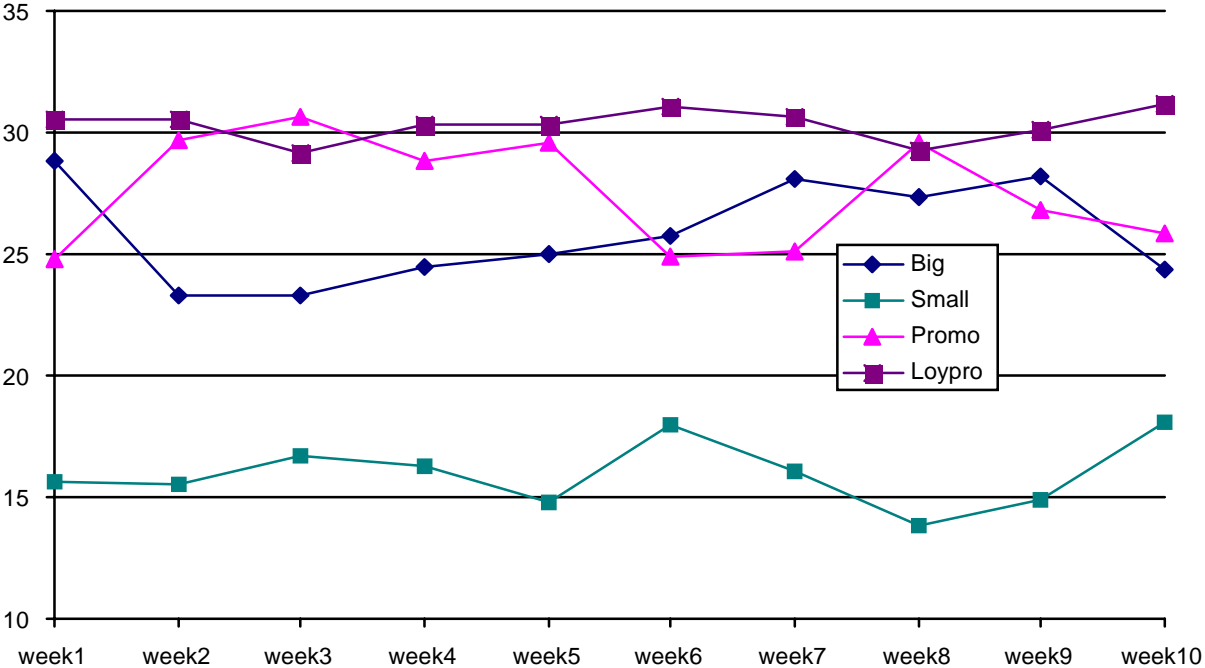


**Graph 1: Market Share, weekly periods**

**6.2 Excess Loyalty**

Table 2 gives penetration figures and major purchase loyalty statistics (average purchase frequency, share of requirements, proportion of solely loyal buyers) for each brand. In each case an observed (ie actual) and a theoretical (ie predicted/expected) figure is presented. In making comparisons between these figures we are firstly seeking to identify the overall fit of the Dirichlet model to the market. If the model fits well then we know that the market is a normal, or at least approximately normal, stationary repeat-purchase market. Secondly, we are looking for brands deviating from the expected figures, particularly we are looking for deviations that indicate "excess loyalty". In this paper we follow the usual practice in Dirichlet modelling to consider differences of the following magnitudes as being substantial deviations: greater than 3

percentage points for penetration, 0.3 (for average purchase frequency or 3 percentage points for share of category requirements).[5]

**Table 2: Loyalty Statistics, 10 week period**

| Brand | Penetration (%) | | Average Purchase Frequency | | Share of Requirements (%) | | Sole Buyers (%) | |
|---|---|---|---|---|---|---|---|---|
| | Obs. | Theo. | Obs. | Theo. | Obs. | Theo. | Obs. | Theo. |
| | | | | | | | | |
| *LOYPRO* | *54* | *57* | *6.9* | *6.5* | *52* | *47* | *22* | *16* |
| PROMO | 52 | 54 | 6.5 | 6.3 | 48 | 46 | 16 | 15 |
| BIG | 52 | 51 | 6.0 | 6.2 | 47 | 45 | 18 | 14 |
| SMALL | 41 | 35 | 4.8 | 5.5 | 36 | 39 | 13 | 11 |
| | | | | | | | | |
| Average | 50 | 49 | 6.1 | 6.1 | 46 | 44 | 17 | 14 |
| Any | 98 | 98 | 12.5 | 12.5 | 100 | 100 | 100 | 100 |

*Italics signify the loyalty program participant brand

It is immediately apparent from table two that, while there are deviations for some brands, the model still describes the market reasonably well. Usually in near stationary markets the Dirichet predictions match the observed figures for each brand with deviations no more than a point or so for penetration and +/- 0.1 for average purchase frequency (see Goodhardt et al., 1984, Ehrenberg, 1988, Ehrenberg and Uncles, 1997). On one hand this good fit is to be expected since retail petrol is typical of a "Dirchlet type market" and has been modelled successfully previously. On the other hand there is good reason to suspect that this market is far from being stationary. While stationarity is one of the assumptions of the Dirichlet model, it is an emerging generalisation that the model is able to "cope" with quite a substantial degree of non-stationarity. In particular, it seems that the non-stationarity of one or two brands is not sufficient to upset the overall fit, and predictions for the other brands, much. It is this feature that makes the model so useful, if it broke down under non-stationary conditions this would be severely limit its practical use in assessing marketing interventions. Likewise if it always fitted perfectly (ie even in non-stationary conditions) it would also be useless, consistently perfectly fitting models tell us little about the empirical world that we do not already observe.

The deviations from Dirichlet predictions are interesting. There is a clear "excess loyalty' effect for the brand running the loyalty program: LOYPRO. LOYPRO has lower penetration

---

[5] The sampling errors associated with Dirichlet statistics have had relatively little published investigation. There does not exist an available test of statistical significance to test differences between observed figures and those predicted by Dirichlet. There is also some disagreement among researchers regarding whether such a test would be of much practical value since deviations tend to be rare and easily spotted. A full discussion of these issues is beyond the scope of this paper.

than expected (ie lower than the Dirichlet theoretical prediction) and higher than expected purchase loyalty. LOYPRO (the participant brand in the retalitory promotion) also shows this phenomenon, although to a much less extent. BIG (a significant other market player) appears normal. SMALL (the smallest brand in the market) appears to show an "anti-loyalty" effect. This is probably at least partially due to model fitting, ie a deviation for one brand "causing" a deviation for another, however inspection of the observed figures alone shows a strong double jeopardy effect suggesting that the "anti loyalty" effect is possibly also due to things going on in the real market, ie the non-stationarity of two of the other brands.

Overall the results give a strong indication of a loyalty program having an effect, and it is a substantial effect (ie greater than 3 percentage points deviation for penetration and share of category requirements, and 0.3 for average purchase frequency). This is further supported by direct examination of LOYPRO's apparent excess of repeat purchase. Table 3 reports the proportion of buyers who bought a brand in the first 5 weeks who then repeat purchased in the following 5 week period. LOYPRO has a greater proportion of repeat buyers than expected and this phenomenon is "caused" (ie the deviations are attributable to) entirely by the loyalty programs' members, the rate of repeat buying between the two periods is in line with theoretical expectations for non-program members. This deviation for program members (and LOYPRO's customers overall) implies some trend (upwards) between the two periods.

PROMO, which showed excess repeat-purchase loyalty in the total 10 week figures (Table 2), here shows no excess of repeat-purchase between the first and second 5 week periods. This strongly suggests that PROMO's excess (average over the whole 10 week panel - see Table 2) was due to a temporary deviation occurring some time within the 10 week period and between the two, 5 week "slices'. The market share movements shown in graph 1 concur.

The other brands show repeat purchase rates closely in line with theoretical expectations, except that amongst loyalty program members repeat-purchase is systematically lower than expected for the non-participant brands. This suggests some trend (downwards) in loyalty program members' repeat-purchase of these brands (BIG, SMALL, PROMO) between the two periods.

**Table 3: Repeat Buyers, 5 weekly periods**

| Brand | All Repeat Buyers | | Loyalty program Members | | Non-Loyalty Program Members | |
|---|---|---|---|---|---|---|
| | Obs. | Theo. | Obs. | Theo. | Obs. | Theo. |
| *LOYPRO* | *82* | *79* | *87* | *82* | *75* | *75* |
| PROMO | 75 | 78 | 68 | 75 | 79 | 79 |
| BIG | 77 | 77 | 72 | 75 | 80 | 79 |
| SMALL | 70 | 73 | 71 | 72 | 72 | 72 |
| | | | | | | |
| Average | 76 | 77 | 75 | 76 | 77 | 76 |
| Any | 98 | 97 | 99 | 99 | 98 | 97 |

*Italics signify the loyalty program participant brand

## An Indicator of Causality

Observing excess loyalty for program members and not for non-members is a necessary condition if we are to attribute causality for any excess loyalty to the loyalty program. Comparing the brand buying of members with non-members reveals little about the impact of the loyalty program because of selection effects, that is heavier buyers of the brand tend to join the loyalty program. However, the Dirichlet norms effectively adjust for this difference. That is, while differences in average purchase frequency (and other loyalty measures) can not be causally attributed to the loyalty program, it is reasonable to attribute differences in "excess loyalty" to the loyalty program.

Table 4 presents separate results for loyalty program members and non-members. The theoretical figures are from separate Dirichlet models fitted to each separate group. As can be seen, there is an excess loyalty effect only amongst buyers of LOYPRO who are members of the loyalty program. Thus the overall excess loyalty effect shown in tables 2 and 3 is due entirely to the loyalty program members. No excess loyalty is observed amongst non-members.

**Table 4: Average Purchase Frequency Members cf Non-Members, 10 week period**

| Brand | Loyalty Program Members | | Non-Loyalty Program Members | |
|---|---|---|---|---|
| | Obs. | Theo. | Obs. | Theo. |
| *LOYPRO* | *7.9* | *7.2* | *5.6* | *5.7* |
| PROMO | 5.4 | 5.9 | 7.1 | 6.4 |
| BIG | 5.7 | 5.8 | 6.2 | 6.3 |
| SMALL | 4.8 | 5.5 | 4.7 | 5.4 |
| | | | | |
| Average | 6.0 | 6.1 | 5.9 | 6.0 |
| Any | 12.1 | 12.1 | 12.2 | 12.2 |

*The excess loyalty enjoyed by the loyalty program brand is entirely due to customers who are members of the loyalty program. Whereas the excess loyalty enjoyed by the prmotional brand is extremely due to non-loyalty program customers.*

Intriguingly PROMO's excess loyalty is entirely due to non-members of the loyalty program, the program members actually show a deficit in average purchase frequency for PROMO (as they do for every other non-participating brand). This suggests that the loyalty program insulated LOYPRO from PROMO's promotional efforts (while non-loyalty program members were still affected by this promotion). That is, program members who also bought PROMO appear largely unaffected by PROMO's promotion. This is supported by the fact that PROMO failed to steal as much marketshare from LOYPRO as it should have in making its temporary sales gains.

Because these two brand have higher than expected loyalty they have lower than expected penetration (see table 5 below). This deficit in observed, compared with predicted, penetration for LOYPRO and PROMO should not be interpreted meaning that these brands lost customers. It is a reflection of Dirichlet "saying" that these two brands have too much repeat purchase loyalty for their penetration level, or put another way, that they have too little penetration for their level of loyalty. The fact that they do not fit (normal patterns) is reflected in *both* the average purchase frequency and penetration statistics at the same time.

**Table 5: Loyalty Program Members cf Non-Members Penetration, 10 week period**

| Brand | Loyalty Program Members | | Non-Program Members | |
|---|---|---|---|---|
| | Obs. | Theo. | Obs. | Theo. |
| *LOYPRO* | *63* | *69* | *45* | *44* |
| PROMO | 47 | 44 | 53 | 59 |
| BIG | 42 | 42 | 59 | 59 |
| SMALL | 39 | 34 | 41 | 35 |
| | | | | |
| Average | 48 | 47 | 50 | 49 |
| Any | 98 | 98 | 98 | 98 |

*The loyalty program's effect on penetration is largely confined to program members, whereas the promotion's effect is largely confined to non-members of the loyalty program.*

Amongst non-loyalty program members the observed penetration rankings (see Table 5 above) are BIG as market leader (59% penetration), followed by PROMO (53%), then LOYPRO (45%), then SMALL (41%). However, amongst loyalty program members it is a completely different story with LOYPRO first, followed by PROMO, then BIG, then SMALL. It is this difference, combined with the differences in average purchase frequency that produce the market share increases for LOYPRO and PROMO.

As was observed in the average purchase frequencies (table 4) LOYPRO's deviation from Dirichlet predictions is entirely due to loyalty program members.

# 7. Conclusions

This research has shown in detail the impact of a loyalty program and has distinguished this impact from other confounding competitive effects, ie the promotion by PROMO and the lack of effective retaliation by SMALL. It is clear that certain effects can be attributed to the loyalty program and its launch.

The LOYPRO brand is not behaving as it would if it were stationary. It shows excess loyalty and this effect seems entirely attributable to the loyalty program. Non-loyalty program LOYPRO buyers are not being affected.

The PROMO brand is also showing deviations though not as significant in spite of a substantial market share movement. In this case however, it is non-loyalty program members that are

affected, suggesting that the loyalty program somewhat insulated buyers (members) from this promotion.

The combined result of the loyalty program and PROMO's promotion is to change overall market share rankings with LOYPRO the biggest winner in the 10 week panel period. In effect LOYPRO stole share from everyone, PROMO stole share from everyone but more so BIG and less so LOYPRO. And the manner in which LOYPRO gained share was in line with the pattern of a loyalty program (as distinct from other marketing activity).

An important question arising from this research is whether this effect is temporary or likely to be of a lasting nature. The answer depends on how much the observed loyalty effect can be attributed to the loyalty program and how much can be attributed to the impact of its launch and associated advertising, publicity and word-of-mouth/excitement. We suggest that the bulk of the effect is due to the nature of the program rather than its launch. Research on price promotions suggests that the bulk of any sales increase is due to the price reduction rather than the accompanying advertising, although the advertising is needed to create awareness of the price promotion. Advertising alone seldom produces immediate sales increases, let alone marked increases. Likewise non-price/incentive promotions seldom produce the large sales spikes observed with price promotions. Industry reports from New Zealand were that once the market has settled down, eg PROMO's promotions ended, LOYPRO had gained several percentage points of marketshare sufficient to wrest marketshare leadership from BIG. The question remains whether this marketshare position is held while still in a state of "excess loyalty" or whether LOYPRO's penetration has increased substantially and brought the brand into (double jeopardy) line. We think that they answer is that LOYPRO still enjoys excess loyalty, that the loyalty program has produced a permanent deviation from normal Dirichlet market patterns. However, the permanency of the excess loyalty effect remains uninvestigated.

## Replication Results

Finally, it is important to stress that this research is a replication/extension of an original study. As such in addition to the stand alone findings discussed above there is also the knowledge produced because of the differences in conditions between the two studies. Specifically this replication has shown:

1.  It has supported the use of Dirichlet norms to assess the impact of marketplace interventions, especially loyalty initiatives. The comparisons against Dirichlet predictions clearly showed evidence of the effects of the two marketing interventions.

2. The replication has supported the original study's contention and evidence that when loyalty programs successfully impact on buying behaviour they do bring about excess loyalty rather than normal patterns of market share gain.

3. The excess loyalty program effect also appears to be quite large in spite of quite a small marketshare shift. This again supports Sharp & Sharp's original argument against using market share to appraise the marketplace impact of a loyalty program.

4. The extension to a different market with an identical loyalty program has shown that the lack of product or price differentiation enhances the loyalty program's excess loyalty effect. The market was known to be promotion sensitive and the results show that this in effect means loyalty program sensitive as well.

5. Promotions, rather surprisingly, also impact on marketshare via excess loyalty rather than excess penetration or the normal ratio of gains in penetration and average purchase frequency. This provides further support for the contention that promotions are taken up largely by existing customers (Ehrenberg et al., 1994).

## References

Brennan, M. and D. Esslemont, 1994. The Accuracy of the Juster Scale for Predicting Purchase Rates of Branded, Fast-Moving Consumer Goods. Marketing Bulletin (5), 47-53.

Chalmers, A.F., 1976. What Is This Thing Called Science?, Brisbane: University of Queensland Press.

Dowling, G.R. and M. Uncles, 1997. Do Customer Loyalty Programs Really Work? Sloan Management Review 38 (No. 4, Summer), 71-82.

East, R., 1997. Consumer Behaviour: Advances and Applications in Marketing, London: Prentice Hall.

East, R. and A. Hogg, 1997. The Anatomy of Conquest: Tesco versus Sainsbury. Journal of Brand Management 5 (1), 53-60.

Ehrenberg, A.S.C., 1988. Repeat Buying Facts, Theory and Applications, New York: Oxford University Press.

Ehrenberg, A.S.C., G.J. Goodhardt and T.P. Barwise, 1990. Double Jeopardy Revisited. Journal of Marketing 54 (July), 82-91.

Ehrenberg, A.S.C., K. Hammond and G.J. Goodhardt, 1994. The After-Effects of Price-Related Consumer Promotions. Journal of Advertising Research 34 (July/August), 11-21.

Ehrenberg, A.S.C. and M.D. Uncles (1997) South Bank Business School and University of New South Wales, London.

Fader, P.S., 1993. Integrating the Dirichlet-Multinomial and Multinomial Logit Models of Brand Choice. Marketing Letters 4 (2), 99-112.

Goodhardt, G.J., A.S.C. Ehrenberg and C. Chatfield, 1984. The Dirichlet: A Comprehensive Model of Buying Behaviour. Journal of the Royal Statistical Society 147 (part 5), 621-655.

Kahn, B.E., M.U. Kalwani and D.G. Morrison, 1988. Niching Versus Change-of-Pace Brands: Using Purchase Frequencies and Penetration Rates to Infer Brand Positionings. Journal of Marketing Research 25 (November), 384-390.

Lomax, W., K. Hammond, M. Clemente and R. East, 1996. New Entrants in a Mature Market: An Empirical Study of the Detergent Market. Journal of Marketing Management 12 , 281-295.

McPhee, W.N., 1963. Formal Theories of Mass Behaviour, New York: The Free Press of Glencoe.

O'Brien, L. and C. Jones, 1995. Do Rewards Really Create Loyalty? Harvard Business Review (May-June), 75-82.

Sharp, B., 1998. Comment on the Future of Loyalty Schemes: Can Loyalty Schemes Reduce Customer Vulnerability? Journal of Targeting, Measurement and Analysis for Marketing 7 (No. 1), 22-24.

Sharp, B. and A. Sharp, 1997. Loyalty Programs and Their Impact on Repeat-Purchase Loyalty Patterns. International Journal of Research in Marketing 14 (No. 5), 473-486.

Shingleton, J., 1998. Development of Petrol Retailing in the United Kingdom. Journal of the Market Research Society 40 (No. 1, January), 13-23.

Uncles, M., 1994. Do You or Your Customers Need a Loyalty Scheme? Journal of Targeting, Measurement and Analysis for Marketing 2 (No. 4), 335-350.

Wright, M., Z. Kearns, A. Sharp and B. Sharp, 1998. Predicting Repeat-Purchase from a Single Shot Survey. In: 27th EMAC Conference vol. 5. Stockholm: Stockholm School of Economics