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Loyalty programs and their impact on repeat-purchase loyalty patterns

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Abstract

Loyalty programs are currently increasing in popularity around the world. This paper discusses the potential of loyalty programs to alter the normal market patterns of repeat-purchase behaviour which characterise competitive repeat-purchase markets. In line with this thinking, a large scale loyalty program is evaluated in terms of its ability to change normal repeat-purchase patterns by generating 'excess loyalty' for brands in the program. Panel data were used to develop Dirichlet estimates of expected repeat-purchase loyalty statistics by brand. These estimates were compared with the observed market repeat-purchase behaviour. Overall a trend towards a weak level of excess loyalty was observed, although the expected deviation was not consistently observed for all the loyalty program brands. Only two of the six loyalty program participant brands showed substantial excess loyalty deviations. However, these deviations in repeat-purchase loyalty were observed for non-members of the loyalty program as well as members and appear likely to be at least partially the result of other loyalty efforts particular to these brands. © 1997 Elsevier Science B.V.

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1. Introduction

In recent years there has been a rise in the use of loyalty programs by marketers and academic interest in measuring loyalty, as evidenced by this special edition of *IJRM*. Loyalty programs, which provide customers with loyalty incentives such as points redeemable for prizes or discounts, are back in the marketing spotlight. The airlines' frequent flyer schemes were amongst the first in this new wave of very large scale consumer oriented programs. Now there are programs offered by supermarkets, financial institutions and all sorts of retailers. This change has been stimulated by beliefs (which may or may not be true) that marketing has not paid sufficient attention to customer retention (Kotler, 1992), that increased rates of retention lead to significantly increased profitability (Reichheld and Sasser, 1990), and that decreased differentiation and increased consumer cynicism has led to an overall erosion in loyalty levels which, therefore, require special marketing attention to restore.

Do loyalty programs increase loyalty? This article reports a major scientific empirical investigation of the success/failure of a loyalty program in bringing about increased levels of behavioural loyalty. We begin with a brief discussion of the rise in popularity of loyalty programs. We then distinguish two potential alternative effects of marketing efforts: (a) a normal market share gain, and (b) an abnormal gain in excess repeat-purchase loyalty, which may or may

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not be accompanied by a market share gain. We argue that highly defensive activities, such as loyalty programs, are differentiated from other marketing efforts by their emphasis on increasing repeat purchase loyalty rather than purely on gaining market share. In line with this view, a methodology for assessing the impact of loyalty programs on repeat-purchase loyalty is outlined. The approach is used to examine Fly Buys, the largest consumer loyalty program in Australia and one of the largest in the world.

2. The rise of loyalty programs

The customer service and quality movement of the 1980s has, to some degree, been replaced by enthusiasm for loyalty/relationship marketing. The idea of a company developing a relationship with its customer is not new, it has been examined for many years in the area of channel and distribution management and more recently has been reflected in the sales management literature which now presents the role of salesperson as a relationship builder rather than a 'sales' person (Swan et al., 1985; Manning and Reece, 1992; Patton, 1993). Even the formalisation of marketing strategies which reward customers for that relationship, which is the basis of loyalty programs marketing, is not new but the scale and prevalence of such programs have increased dramatically in just a few years across a widening range of industries.

Loyalty program adoption is a part of a new emphasis on defensive marketing, that is, activities which focus on holding on to existing customers and getting more custom from them, in contrast to activities which focus on winning new customers. While much marketing activity, such as advertising, price reductions and increases in service quality, can have a positive effect on repeat-purchase loyalty any increase in repeat-purchase loyalty is incidental rather than being a direct objective [1]. The primary objective is usually a sales or market share gain, which we know occurs mainly through customer acquisition with only small gains in average purchase frequency (Ehrenberg et al., 1990). Loyalty programs are distinguished by their degree of emphasis on lifting average purchase frequency and other aspects of repeat purchase loyalty. They explicitly reward customers for consolidating their purchases and reducing the size of their brand repertoires.

3. Evaluating a loyalty program

3.1. Changes in behavioral loyalty

Loyalty programs are structured marketing efforts which reward, and therefore encourage, loyal behaviour: behaviour which is, hopefully, of benefit to the firm. The effectiveness of loyalty programs which reward specific types of consumer behaviour should be evaluated in terms of the type of behavioural changes they aim to bring about [2]. Loyalty program members (customers) should show changes in repeat-purchase loyalty which are not evident amongst non-program members, specifically:

- decreased switching to non-program brands
- increased allocation of share of requirements to the program brand(s)
- increased repeat-purchase rates (for the program brand(s))
- increased usage frequency (for the program brand(s))
- greater propensity to be exclusively loyal (to the program brand(s))
- greater propensity to switch between program brands and less propensity to switch to non-program brands

Loyalty programs, through their emphasis on building repeat-purchase loyalty, operate differently from other marketing efforts such as advertising campaigns and sales promotions and potentially may

[1] Much marketing activity can also be classed as defensive in that, due to competitive activity, the net result is market stationarity. However, the objective of new marketing initiatives is usually to gain market share, and when marketing actions do result in share gains we know that this comes about mainly through new customer acquisition.

[2] We are concerned with behavioural loyalty rather than attitudinal loyalty because, in practice, loyalty programs only reward behaviour. Customers are not given points, prizes, discounts or any other reward/incentive for changing their attitudinal loyalty.

achieve distinct benefits for the firm. Loyalty promotions can be distinguished from sales promotions by their degree of defensive orientation and their longer term nature. When the promotion finishes, there is nothing to stop consumers from reverting to their previous behaviour patterns and indeed this is what appears to happen (for empirical evidence see Ehrenberg et al., 1994). Loyalty programs, through the equity the customer builds in the program (e.g., via points collection), aim to lock customers in [3].

A loyalty program could have an effect like a long term promotion, that is, it could increase market share and this market share gain could come about in the normal manner, that is through a substantial gain in penetration (number of customers) and a small increase in average purchase frequency (and other repeat purchase loyalty measures) (Ehrenberg et al., 1990). However, a more likely effect, given the nature and objectives of loyalty programs, is that the result would be an increase in repeat-purchase loyalty without the expected degree of increase in penetration. Thus the result could be referred to as a 'large' increase in repeat-purchase loyalty for a 'small' (even zero) increase in market share.

It is worth considering that a loyalty program may be effective on a number of repeat-purchase loyalty measures, as listed previously, while market share and overall sales remain relatively stable or even perhaps decline. Such behavioural change may be of great benefit to the firm in spite of not bringing about increases in revenue. Increased repeat-purchase loyalty may allow the formation of closer relationships with customers, allowing the firm to become more knowledgeable about its clients' needs and wants and thus able to provide better service at a lower cost. It may also reduce marketing costs, in that the firm need spend less on convincing customers to return. And it may raise barriers to entry to the market, lessening the chance of future competitive threats; for example, it is more difficult to enter the airline industry today because of the additional requirement of having a frequent flyer program.

[3] They also potentially lock in the firm because such programs, even unsuccessful ones, are difficult for firms to withdraw from without upsetting large numbers of customers. Interestingly, at the time of writing, Telecom Australia has announced its intention to withdraw from the Fly Buys program in Australia.

Moreover, a loyalty program need not lift sales revenue to be a success in financial terms. From a finance theory perspective, a firm's value is determined by its future net income streams and the risk associated with those income streams (Copeland et al., 1990). Loyalty gives something of a guarantee of future earnings; even if current earnings are high, a low level of loyalty means that the future earnings may be at risk (Pearson, 1994). If a loyalty program increases the certainty of future income flows, through decreasing the risk of losing customers (revenue providers), then it may have a real, and perhaps substantial, impact on shareholder value without affecting current revenue or market share levels.

It is not sensible, therefore, to use market share gain alone to evaluate a loyalty program. Even if a sales increase can be directly attributable to a loyalty program, and not some other influence, it is questionable whether this is an appropriate aim for a loyalty program as there are many other more simple and less risky paths to achieving this objective. Indeed, substantial sales gains may be an indication that the program is giving away too much value to the customer, to the firm's financial detriment. Likewise, there is the danger that a good loyalty program might be incorrectly judged a failure if sales were not improving even though other benefits were accruing to the firm.

In this article we focus on assessing the impact of a loyalty program in terms of it bringing about unusually high repeat-purchase loyalty without giving the firm corresponding large numbers of customers (increasing market penetration). This may occur with or without a gain in market share, although the former is more plausible. The simple issue of market share gains (with corresponding normal increases in repeat-purchase loyalty) is easily addressed via traditional market research or pooled sales data, whereas determining whether excess loyalty has been generated requires an understanding of what level of repeat purchase loyalty is normal for any brand. Fortunately an existing theory of buyer behaviour provides this understanding.

3.2. Loyalty benchmarks

In order to test if a loyalty program is having an effect on repeat-purchase loyalty, it is necessary to

know what levels of performance should be normally expected for each brand in each industry, given its level of market share at any point in time. These benchmarks are provided by the Dirichlet and NBD models of repeat-purchase patterns (Ehrenberg, 1988, Ehrenberg and Uncles, 1997; Goodhardt et al., 1984) which provide a *natural baseline* (Fader and Schmittlein, 1993; Dowling and Uncles, 1997) for the repeat-purchase loyalty each brand should enjoy. These models and the empirical generalisations associated with them have been widely tested and supported in marketing (Uncles et al., 1995), having been observed for over 30 years and across European, US, Asian and Australasian markets.

These models allow repeat-purchase loyalty performance figures to be accurately predicted for stationary markets, which is most markets most of the time, but they also have been shown to hold for only approximately stationary markets (Ehrenberg and Uncles, 1997). An assessment can be made of the performance of the brands in the loyalty program against the loyalty baselines given by the repeat-purchase models. Specifically, deviations from these baselines for brands linked to the loyalty program would provide early indications of the program's impact.

A number of key performance measures can be predicted using the Dirichlet and NBD models:

(1) *Penetration*: the percentage of consumers buying from the total product/service category at least once in a specified time period and the percentage of consumers buying the various individual brands at least once in a specified time period.

(2) *Purchase frequency*: the number of purchases per buyer of the total product/service category in a specified time period and the number of purchases per buyer of individual brands in a specified time period.

(3) *Repeat-buying*: the percentage of buyers who continue to buy the same brand in two equal-length time periods.

(4) *Incidence of sole buyers*: the percentage of buyers who only buy the one specified brand within the specified time period.

(5) *Brand-duplication*: the percentage of buyers who buy another brand within the specified time period, conditioned on having bought a specified brand.

If a loyalty program is having a loyalty effect on a brand some expected discrepancies will occur between the model predictions and observed figures for the key performance measures listed above. This is because the model describes a normal stationary market, that is, the Dirichlet model provides predictions for a normal, competitive, repeat-purchase market where no substantial changes to repeat-purchase patterns occur overall. As is discussed further in the following section, the Dirichlet model therefore provides the baseline against which to evaluate the changes a loyalty program might bring about. This baseline allows effects to be evaluated without using a classic before and after (loyalty program launch) experimental design. This is a very practical advantage since pre-launch data is often not available and can not be collected post hoc, as was the case for the loyalty program we examine in this article [4]. This is just one illustration of the benefit and importance of developing empirical generalisations (and models such as Dirichlet) in marketing.

3.3. The expected impact of a successful loyalty program

When marketing effort is successful in increasing a brand's market share it has a positive effect on a brand's penetration and a much smaller positive effect on average purchase frequency (Ehrenberg et al., 1990). This empirical generalisation is captured in the Dirichlet model, a single parsimonious model which states that all brand loyalty measures tend to vary together from one brand to another in line with the brand's level of penetration or, in effect, market share (Ehrenberg and Uncles, 1997). Moreover, all brands have similar repeat-purchase loyalty, but bigger brands have slightly more than smaller brands (a Double Jeopardy effect – see Fig. 1).

Loyalty programs, in contrast to other marketing efforts, should have more of an effect on the average purchase frequency and share of requirements mea-

[4] Although the decision to use the Dirichlet rather than a simple before and after approach had been made prior to the launch of Fly Buys (outlined in the ARC Collaborative Grant application 'Assessing the impact of marketing programs on customer retention/loyalty').

sures than on penetration. This is because loyalty programs are most attractive to existing buyers of the brand and heavy buyers of the category, who also tend to be existing buyers of the brand given that heavy buyers tend to maintain larger repertoires of brands (Ehrenberg, 1988). These buyers are already highly likely to have bought at least once during any given period and so penetration is unlikely to rise. Conversely, lighter buyers of the category or brand can still be attracted by promotions when they buy, whereas loyalty programs are not as attractive to them. The substitution of promotions for a loyalty scheme, particularly when competitors continue with promotions, may potentially even result in a decline in the penetration statistic for loyalty program brands.

In line with this reasoning, an effective loyalty program should have a greater impact on a brand's average purchase frequency (and other related loyalty behavioural measures) than it has on the brand's penetration level, causing the brand to achieve 'excess loyalty' (see Fig. 2). This means that the brand will have a higher average purchase frequency than would be expected given its level of penetration. Alternatively, this can be expressed as the brand having a lower than expected penetration given the brand's average purchase frequency. Effectively, the brand is selling more often to the same people than would be the norm.

It is an accepted empirical generalisation that in competitive repeat-purchase markets people generally show 'divided loyalty', they shop from a repertoire of brands and are rarely 100 percent loyal, a generalisation captured by the Dirichlet (see Ehrenberg and Uncles, 1997). Loyalty programs should affect this behaviour and increase the share of requirements the participant brand accounts for and increase the number of solely loyal buyers. Thus, average purchase frequency in Fig. 2 could be replaced with share of requirements (SCR).

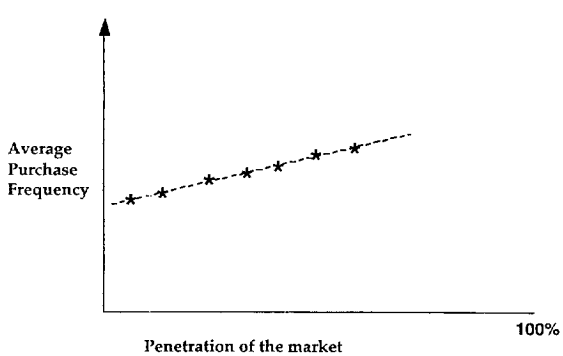

Fig. 1. Double Jeopardy.

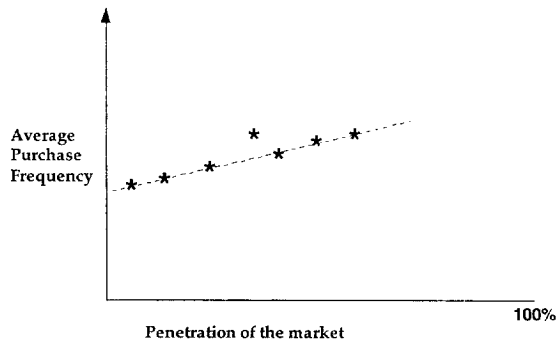

Fig. 2. Excess repeat purchase loyalty.

In addition to these deviations from Dirichlet repeat-purchase loyalty predictions, there should also be a higher than normal duplication of purchase between the participant brands in the same industry and far less switching to non-program brands, that is, the loyalty program should create a degree of market 'partitioning'. This would result in a deviation from the duplication of purchase law (captured by the Dirichlet model). The duplication of purchase law states that the dominant effect on duplication of purchase is simply a brand's penetration or, in effect, its market share. Thus, any brand has many of its buyers also purchasing from the large share brands and only a few of its buyers also purchasing from small share brands. What percentage of buyers two brands will share with each other depends primarily on their relative market shares rather than on their 'positioning' (Ehrenberg, 1988). Deviations from the duplication of purchase law, i.e., market partitioning, tend to be the result of major functional differences/similarities between brands. A loyalty program, if it were affecting repeat-purchase loyalty might be expected to bring about such a deviation.

4. The Fly Buys case

Fly Buys is Australia's largest consumer loyalty program and one of the world's largest in terms of

coverage. The retail outlets involved represent more than 20 percent of Australian retail spending and cover not just store patronage but also credit card usage and petrol sales. The program offers points to shoppers (for store patronage) that can be redeemed for free air travel or accommodation. Typically customers earn one point per every $20 spent, though the points barriers vary across the store chains.

The program was launched on August 29, 1994 accompanied by considerable promotion and press interest. It was considered by many to be the 'marketing event of the year' (Anonymous, 1995). Fly Buys aimed to have 350 000 members in its first week of launch, 1 million by the end of the year and 1.6 million members by its second year of operation (Mann, 1994). 10.8 million brochures were printed for the launch, the largest print run in Australia since the last census, and 2.4 million plastic (magnetic swipe) membership cards, the largest production run since the introduction of Medicare (the national public health program). Fly Buys' operating budget is consistently reported to be in excess of A$20 million per annum (Mann, 1995; Shoebridge, 1995) a figure which does not include customer rewards (i.e., travel).

At the beginning of 1996, Fly Buys had a membership of over 3 million, or one in four Australian households. It achieved this penetration very quickly, ahead of objectives, with membership plateauing within a few months of its launch.

The program covers all purchases made at participating stores (or with the participating credit card). Consumers are required to present the Fly Buys card along with payment to collect the points. The Fly Buys card therefore enables the collection of consumer behaviour data for the participant brands.

4.1. Survey methodology

As Fly Buys concerns store patronage, rather than the purchase of fast-moving consumer goods brands, commercial panel data on consumer behaviour were not available. It was necessary to set up a consumer panel to collect the required behavioural data. A representative sample of 745 households was drawn from the Adelaide metropolitan area, a popular test market. The sample was representative in terms of Adelaide metropolitan demographics and the proportion of Fly Buys members nationally.

Behavioural data were collected in relation to purchasing behaviour at the different retail store brands and purchase frequency. Information from the three key industries of retail fuel, department stores, and supermarkets was gathered, these data included every purchase occasion for the category and a record of which brand/store respondents shopped at. Respondents were posted diaries in which to record their purchase behaviour. Each week the data were collected via telephone interviews conducted by IQCA (Interviewer Quality Control of Australia) accredited interviewers.

The panel data were analysed primarily via Dirichlet modelling. The applicability of the Dirichlet and NBD model to store choice has been shown (Wrigley and Dunn, 1984a; Wrigley and Dunn, 1984b) and panel data records of consumer behaviour have been shown to be very reliable (Ehrenberg, 1988). Panel data provide all the necessary inputs to calculate the Dirichlet Model and to compare observed data to Dirichlet predictions. Though the number of input variables required is fairly low, the longitudinal panel typically produces vast volumes of raw data upon which the calculations are based.

The panel ran from just after the launch of Fly Buys until the week before Christmas, 1994. It recommenced in mid January 1995 and ran until mid April. The drop-out rate between these two periods was extremely low, with approximately 90 percent of first panel members being members of the second panel. However, there was considerable drop out in the period just prior to Christmas and respondents required a re-training period for their diary usage. This resulted in one useable 9 week panel prior to Christmas and a twelve week panel after Christmas. As the composition of the two panels varied slightly and in order to keep sampling error variations to a minimum, the results are examined as an average of two nine week panels.

A third measure of behaviour was a survey using probabilistic measures to calculate Dirichlet parameters in September 1995 (for details see Wright et al., 1996), this confirmed the results of the previous panels but is not reported here.

In order to gain greater insight into causality,

separate modelling of Fly Buys and non-Fly Buys members was performed to identify whose behaviour the deviation was attributable to. This splitting of the sample increases sampling error, therefore the analysis was undertaken on the longest panel, the twelve weeks post Christmas, Fly Buys membership by this time was very stable. This approach facilitated a greater degree of separation of the possible effect of Fly Buys from other marketing stimuli.

5. Results

Initial awareness of Fly Buys was extremely high in the post launch period with 93 percent of the panel respondents having heard of Fly Buys in the first month of its launch. Comprehension of the nature of the program was also good including overall knowledge of which stores/brands were in the program. The differences in awareness largely reflected market share/usage differentials (as has been shown by Barwise and Ehrenberg, 1985; Bird and Ehrenberg, 1966a; Bird and Ehrenberg, 1966b).

5.1. Changes in loyalty patterns

Tables 1–3 present penetration statistics and three key repeat-purchase loyalty statistics [5] for department stores, retail fuel and supermarket categories, respectively. The tables also present the average deviation from Dirichlet predictions for all major brands measured in the category, including brands not in the Fly Buys program, in order to allow comparisons with any deviations from predictions which were recorded for the Fly Buys brands.

The examination focuses on detecting any upward deviations in repeat-purchase loyalty statistics and downward deviations in penetration. The expected downward deviation in penetration is not to say that the loyalty program brand has actually lost customers (a drop in actual penetration). We expect a downward deviation in penetration (a deviation from Dirichlet predictions) because we expect penetration to be out of kilter with any growth in repeat-purchase loyalty, that is that penetration growth (if there is any) is less than would be expected given the corresponding increase in repeat-purchase loyalty (as brands with high repeat-purchase loyalty normally have very high penetration, i.e., they are large share brands).

The sampling errors associated with Dirichlet fitted statistics have had relatively little published investigation. While it is common in research to treat samples in time as equivalent to samples in space, this is not strictly true with Dirichlet modelling. As the same respondents are being used (in the main in this study) the sampling error is less than if a new sample of people was being drawn each period. It is usual to mark differences greater than 3 (for penetration) or 0.3 (for average purchase frequency) as being potentially important and these guides are adopted here (Wright et al., 1996).

What is immediately apparent is that the category average deviations from predictions are minor. For example, the penetration statistics are typically well within 3 percentage points of predictions for brands which typically have around 50 percent penetration (Tables 1–3). The Dirichlet did a very good job of capturing the market repeat-purchasing patterns as it has done so for numerous other product categories, across many countries. The double jeopardy effect, which is included in the Dirichlet, was also clearly evident in the observed patterns in that small brands not only have fewer buyers (lower penetration) but that those buyers buy them slightly less often (lower average purchase frequency).

As far as loyalty program effects are concerned, there was no across the board impact of Fly Buys on loyalty patterns. That is, we do not observe the consistent finding of Fly Buys brands showing higher levels of average purchase frequency given their individual levels of penetration. However, there is a general pattern of Fly Buys brands being more likely to show a deviation in the direction of excess loyalty, five of the six brands in the Fly Buys program show deviations (albeit usually very small) in the direction of excess loyalty, in comparison, three of the nine non-Fly Buys brands show deviations in this direction and three deviate in the opposite direction. Some of these deviations can be dismissed as sampling error, and some are due to imperfect model fit (a deviation for one brand 'causing' deviations from predictions for another), however, the general pattern

[5] As is usually observed, the repeat-purchase loyalty measures are highly correlated for each brand.

Table 1
Department store performance, average of two 9 week periods

Brand	Penetration (%)		Average purchase frequency		Share of requirements (%)		Sole buyers (%)	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Kmart	47	54	3.6	3.2	35	30	8	7
Target	47	45	2.7	2.9	26	27	5	6
Myer	37	38	2.8	2.7	26	24	4	5
John Martins	47	45	2.7	2.9	26	26	5	6
Harris Scarfe	32	29	2.3	2.5	19	22	3	5
David Jones	14	15	2.4	2.2	20	19	4	4
Mean deviation	3		0.2					
Any	91	90	8.6	8.7				

Italics signify a Fly Buys participant brand.

is clear, there is a trend towards excess loyalty for Fly Buys brands, though for most it is disappointingly small.

Table 4 gives duplication of purchase statistics for department stores, a category with more than one brand participating in Fly Buys. We would expect that Fly Buys should encourage interbrand purchasing between the three Fly Buys brands and discourage duplication of purchase between these brands and the non-Fly Buys brands, creating a market partition. Overall the deviations are very minor. Kmart customers show a slightly higher propensity to also shop at Target than predicted from the duplication of purchase law, however, they show a lower than expected propensity to shop at Myer. While the results in this table are difficult to interpret without knowledge of any partitioning that might have existed prior to Fly Buys, it suggests that any loyalty effect is peculiar to buying *at* Kmart rather than to buyers *of* Kmart. This suggests that the observed result may not be entirely due to Fly Buys, it may be some interaction or additive effect with Fly Buys complementing some other loyalty effort by Kmart. This will be explored further in the next section.

Overall Table 4 does not show evidence of the market partitioning we would expect where there are multiple brands participating in the loyalty program. This is not surprising given that the results in Table 1 do not support an overall department store industry loyalty effect but rather show an effect for one brand, Kmart. One counter to this observation might be that partitioning may have existed prior to the loyalty program being launched and that the program has had the effect of toning down this partitioning. However, this seems implausible in that two of the Fly Buys brands in the department store industry

Table 2
Retail fuel performance, average of two 9 week periods

Brand	Penetration (%)		Average purchase frequency		Share of requirement (%)		Sole buyers (%)	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Shell	44	47	5.0	4.7	46	37	15	13
Mobil	45	45	4.8	4.6	43	37	14	13
BP	38	38	4.3	4.3	38	33	12	11
Caltex	29	29	4.0	4.0	37	30	13	10
Ampol	27	24	3.4	3.8	32	28	8	9
Mean deviation	1		0.2					
Any	86	85	10.1	10.2				

Italics signify a Fly Buys participant brand.

Table 3
Supermarket performance, average of two 9 week periods

Brand	Penetration (%)		Average purchase frequency		Share of requirements (%)		Sole buyers (%)	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Coles	60	62	7.8	7.5	32	29	4	4
Bilo	58	60	7.6	7.3	31	28	4	4
Woolworths	61	61	7.5	7.4	30	29	3	4
Foodland	63	62	7.5	7.5	30	29	3	4
Mean deviation	1		0.2					
Any	97	97	22.3	22.4				

Italics signify a Fly Buys participant brand.

(Target and Kmart) are directly positioned against one another, at least more directly than many of the other brands are against each other. Thus we would expect that if there had been any prior partitioning these two should have had higher rather than lower sharing of custom.

Two Fly Buys brands show excess loyalty deviations of a much greater magnitude than any of the other brands, Kmart in the department store market, and Shell in the retail fuel market. These brands are now examined in detail.

5.2. *Kmart*

Kmart shows the excess loyalty pattern of lower penetration than predicted and higher average purchase frequency than predicted. The effect is quite marked in that Kmart has the same level of observed penetration as two other brands (Target and John Martins, the first a Fly Buys brand and the other not), both of these brands have the same average purchase frequency, as should be expected, of 2.7, while Kmart has an observed average purchase frequency of 3.6. Kmart also shows a higher than predicted share of requirements (SCR) and percentage of solely loyal buyers. The other department store chains in the Fly Buys program, Target and Myer, do not show significant loyalty deviations, although Myer does trend, ever so slightly, in the right direction (i.e., deficit in penetration and excess of average purchase frequency).

Table 5 provides a breakdown of repeat-purchase statistics for each Fly Buys brand comparing Fly Buys members with non members. Fly Buys members show higher average purchase frequency and higher penetration than non-members but this is to be expected since Kmart shoppers were more likely to join the loyalty program, i.e., a selection effect.

Table 4
Duplicate Buyers Table, average of two 9 week periods

% Buyers of: (brand's penetration)	Who also buy: John Martins	*Target*	*Kmart*	*Myer*	Harris Scarfe	David Jones
John Martins (47%)	100	49 -	49 -	43 -	43 +	21 +
Target (47%)	49 -	100	57 +	45 +	38	16 -
Kmart (47%)	50 -	58 +	100	41 -	39 +	12 -
Myer (37%)	55 -	57 +	51 -	100	35 -	24 +
Harris Scarfe (32%)	64 +	57 +	58 +	41 -	100	21 +
David Jones (14%)	73 +	53 -	40 -	63 +	47 +	100
Average duplication	57	55	51 -	45	40	18
Predicted duplication ($D = 1.19$)	56	56	56	44	38	17

Italics signify Fly Buys brands. The signs signify the direction of deviations from predictions.

Table 5
Fly Buys members and non-members, twelve week period

Brand	Penetration (%)				Average purchase frequency			
	Fly Buys members ($N = 104$)		Non Fly Buys members ($N = 281$)		Fly Buys members ($N = 104$)		Non Fly Buys members ($N = 281$)	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Dept store								
Kmart	50	60	48	50	4.1	3.4	3.5	3.3
Target	57	59	39	36	3.5	3.4	2.6	2.9
Myer	52	49	29	29	2.8	3.0	2.7	2.7
Mean deviation (all brands)		4.5		1.9		.3		.2
Retail fuel								
Shell	66	69	39	42	7.2	6.9	5.7	5.3
Mean deviation (all brands)		3.2		1.4		.6		.2
Supermarket								
Coles	72	77	57	60	10.7	10.0	9.5	9.1
Bilo	62	63	57	59	8.3	8.0	9.4	9.0
Mean deviation (all brands)		3.0		2.3		1.0		.9

The important statistics are therefore not the comparisons between observed figures for each group but comparisons between the deviations from Dirichlet predictions. In effect the Dirichlet model is adjusting for the skew in each sample. For Kmart, Table 5 shows excess loyalty deviations for non-members as well as Fly Buys members. The deviations are markedly larger for the Fly Buys group, although, it should be noted, so is the sampling error (the Fly Buys members sample being approximately one third the size of the non members sample).

Most of the deviation that is observed for Kmart occurs in the first nine week panel, leading up to Christmas, and all of this deviation is observed in the last three weeks.

The average purchase frequency observed in the first nine week panel was 4.1 against a predicted average purchase frequency of only 3.5 (see Table 6), in the second twelve week panel the observed average purchase frequency was 3.7 against a closer predicted figure of 3.4 (see Table 7).

An obvious potential explanation for this occurrence is that these deviations are the result of short-term promotions. Kmart is a heavy user of such random promotions and notably it was the only Fly Buys brand across this relatively promotion free period to make substantial use of Fly Buys linked promotions (e.g., double Fly Buys points for purchases this week).

Such promotions illustrate the importance of longer periods of observation. Our panel data reported here is susceptible to single brand promotions making one brand appear 'out-of-sync' with others. Purchase frequency for department stores is lowest of the three industries studied, making it the most

Table 6
Average purchase frequency (3 weekly breakdowns) first nine weeks

	3 Weeks		6 Weeks		9 Weeks	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Kmart	2.1	2.1	3.2	3.2	4.1	3.5

Table 7
Average purchase frequency (3 weekly breakdowns) second twelve weeks

	3 Weeks		6 Weeks		9 Weeks		12 Weeks	
	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.	Obs.	Pred.
Kmart	1.7	1.7	2.5	2.3	3.1	2.9	3.7	3.4

susceptible to large short term aberrations affecting the overall period statistics.

5.3. Shell

As expected, there was a higher penetration for Shell amongst the Fly Buys member group but there was still a high penetration of other brands amongst this group (see Table 5). Overall, as can be seen from Table 2, Shell shows slightly lower penetration than expected and slightly higher average purchase frequency. These deviations are not large, using the average deviations for the category as a benchmark, but they are in the right direction. However, further analysis after splitting the sample into Fly Buys members and non-members showed the same patterns for both groups (see Table 5). Indeed the deviations observed are being primarily driven by the larger non-Fly Buys group. The Fly Buys members are no more 'loyal' to the Shell brand than non-members.

We can only hypothesise what an alternative explanation might be for these minor deviations. The media efforts associated with the Fly Buys program and its launch could be having an effect which extends across members and non-members, though it would be puzzling why this should reveal itself as 'excess loyalty' (as described in Sections 2 and 3) and not a *normal* increase in market share. Shell may have undertaken a different pattern of site rationalisation (all brands have been undertaking a program of reducing the number of retail sites they have). What appears most likely though is that the excess loyalty is caused by Shell's leadership in petrol charge card membership, in this market. Shell enjoys a much higher share of the petrol charge card market than it does in overall market share. This charge card program is operating, in effect, as a loyalty effort running across Fly Buys members and non-members.

6. Discussion

Whether or not this loyalty program has produced many of the effects expected of a loyalty program has been examined in this research and the results are mixed. It is difficult to interpret these results as evidence of the loyalty program substantially changing the repeat-purchase patterns of these markets. The markets look much as they would be expected to, they remain close to 'normal' repeat purchase markets after the introduction of the loyalty program.

However, rather than simply concluding that these results show that loyalty programs, or at least one very large program, do not achieve substantial excess loyalty it is worth considering some of the peculiarities of the program and one of the other ways that it might still be considered successful in a loyalty sense.

6.1. The effect of multiple participants

Fly Buys is a multiple participant program where members can accumulate points from buying from a number of participating store brands across retail categories. Such a structure has several implications which could prevent the program from achieving excess loyalty (in the sense of increasing repeat-purchase loyalty of the customer base without the expected corresponding effect on acquisition rates).

Firstly, multiple participation, particularly by big brands across a number of commonly purchased product categories, could signal to customers that points acquisition is easy and inevitable. If one presumes that customers value their ability to be disloyal, i.e., to sample brands across the product category, then such a scheme is attractive because customers do not feel that they have to give up this behaviour in order to gain the reward. While this is a potential trap for multi-participant programs, Fly Buys required substantial point accumulation before a reward (a free flight) could be earnt. It would, therefore, be expected that many customers concluded that a change in buying behaviour was required in order to accumulate points within a reason-

able time period. Nevertheless, a number of Fly Buys members will have concluded that the multi-participant nature of the program would allow them to accumulate substantial points without changing their repeat-purchase behaviour.

Secondly, multiple brand participation could result in the loyalty program attracting new and light buyers to a brand thereby partially cancelling out any observed aggregate loyalty effects. As previously discussed, when some marketing effort is successful in increasing a brand's sales it has a large positive effect on that brand's penetration rate and a very small positive effect on average purchase frequency (Ehrenberg et al., 1990). This would appear to come about through an increase in average purchase frequency by existing customers being counter balanced by the gaining of a significant number of new but lighter or average buyers [6]. As discussed previously, a loyalty program should have a greater than expected effect on average purchase frequency given the brand's penetration level (alternatively this can be expressed as it having a smaller than expected effect on penetration given the brand's average purchase frequency). However, a multiple participant loyalty program is likely to attract some new light buyers to any brand in the scheme. These will be consumers who are heavy buyers of other brands in the program and hence see benefit in joining the program, but previously light or non-buyers of the one brand in question. It is in their interest to now add this brand to their repertoire, hence that brand gains some new customers (increasing penetration) and they are light customers and so have a depressing effect on average purchase frequency.

This potential effect needs, however, to be viewed in perspective. Loyalty schemes are still most attractive to consumers who are heavier buyers of all the brands in the program and least attractive to light buyers of these categories. Our analysis showed that Fly Buys members were, on average, heavier buyers of Fly Buys brands. If the multiple participant nature of Fly Buys had attracted some new lighter buyers to any of the brands it can not have been many. In all likelihood they were balanced by the loss of light buyers who moved to other brands in the category attracted by promotions which were no longer being run by the Fly Buys brands.

[6] The alternative explanation that marketing efforts result in attracting new heavier than average buyers while not affecting current customers purchase behaviour seems implausible, though (East, 1996) points out that exactly how increased sales are distributed has not yet been examined empirically.

6.2. *Increasing value of purchase*

One desirable effect of a loyalty program would be to increase the average amount bought on each purchase occasion, however, this was not explicitly considered in the research methodology described so far. Increasing average purchase amount is difficult, it has been shown to typically be stable across brands (Ehrenberg, 1988, pp. 10 and 53). In an effort to address this many loyalty programs, including Fly Buys, make use of 'points barriers' where buyers do not earn a point in the loyalty program unless the dollar value of the single purchase occasion exceeds a points barrier. These barriers are often set at, or slightly higher than, the average purchase amount in an effort to encourage additional expenditure. For example, in Fly Buys, expenditure of $20 at a retail fuel outlet was required to earn one point, and additional points were given for each $15 after that. In this case it was hoped that small dollar value purchasers would be encouraged to buy something extra at the convenience store associated with most petrol stations in order to break the points barrier. Additionally the lower incremental points barriers (i.e., $15 increments) would provide general encouragement to spend more on each occasion.

One factor which might inhibit this effect would be a lack of consumer knowledge of the points barriers. Members are less likely to alter expenditure if they are unsure of the desired behaviour. We surveyed retail fuel buyers on their unprompted awareness of Fly Buys points barriers. Knowledge levels were very low, 'do not know' being the most common response by far. A low proportion, considering the opportunity to guess, identified that a minimum expenditure of around $20 was required to earn one point. Only 23 percent of Fly Buys members correctly identified that $35 earned 2 points, suggesting that few appreciated that there was a lower secondary points barrier. When respondents who

were Fly Buys members were told of the $15 second points barrier only 15% said they knew this. Thus the lower marginal barriers are unlikely to have an incentive effect for members.

Other factors which may inhibit increases in average purchase value include that members may stop purchasing once they have reached a points barrier (i.e., decrease their typical purchase value) and/or on occasions when they forget to carry their Fly Buys card and might deliberately buy a small amount.

However, there is the possibility that even without knowledge of the points barriers Fly Buys encourages retail fuel purchasers to use the convenience store when they purchase fuel. Members simply need to appreciate that the more that they spend at a Fly Buys site the more points they earn (the Fly Buys slogan is 'The More You Buy The More You Fly'). Considering the difficulty in increasing average spend per purchase occasion we would not expect this to occur in any of the Fly Buys categories studied in this work.

7. Conclusion

We analysed a large loyalty program in terms of its repeat-purchase loyalty effectiveness, adopting a novel approach based on repeat-purchase baselines predicted by the Dirichlet model. The Dirichlet fitted extremely well in all three of the markets we examined, indicating that the markets are behaving in the normal manner expected of competitive repeat-purchase markets around the world. We did not observe each and every loyalty program brand enjoying excess repeat-purchase, however, we did observe more excess loyalty deviations for loyalty program brands. Of the six loyalty program brands, only two showed substantial repeat-purchase loyalty deviations and both of these showed this deviation for non-members of the loyalty program as well as members suggesting another causal, perhaps additive, factor.

In summary, our research supports those who have argued that changing the fundamental repeat-purchase patterns of markets is very difficult. However, it is clearly possible to alter repeat-purchase patterns, at least to a small degree, and loyalty programs are probably the only marketing effort which deliberately focuses on bringing about such change.

8. Future research

It should be noted that our research only examined the marketplace impact of this one loyalty program, it did not examine the financial impact of the program. Loyalty program success, from a firm's perspective, depends not only on bringing about the behavioural change which is required, but also on firstly choosing to reward a behaviour which is beneficial to the firm beyond the costs of the program. Some industries and firms will benefit more than others from an increase in repeat-purchase loyalty. For instance, firms in industries where the costs of acquiring new customers are high and where new or infrequent customers are more difficult to service would particularly benefit from increases in repeat-purchase loyalty. Our research has not examined this issue. Even if it can be shown that a particular loyalty program does bring about substantial change in repeat purchase loyalty and/or market share further research is needed to examine the financial return in light of the program's costs.

There is much to be done in investigating the marketplace impact of loyalty programs. Four major questions which are raised but not addressed by this piece of research are:

What is the impact of loyalty programs in 'subscription industries' and how can these be measured when Dirichlet baselines are not available? What are the appropriate measures of effectiveness (Defection rates? Perceived switching costs? Average purchase/usage frequency?)?

Can loyalty programs, at least in some instances, result in increases in the average value of a purchase occasion?

Does the impact of a loyalty program on consumer behaviour change (perhaps become more effective) as the consumer builds equity in the program, i.e., accumulates points? Does this change when points are redeemed?

What is the effect of loyalty programs and other defensive marketing efforts on 'differentiation loyalty' (the degree that a brand's customer base is immune/insensitive to competing offers)? Can an increase in differentiation loyalty occur without in-

creases in repeat-purchase loyalty? This is an important research question since the financial payoff of an increase in differentiation loyalty could be very substantial, occurring through higher relative prices, lower relative advertising spend, etc.

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