



The influence of loyalty programme membership on customer purchase behaviour

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Loyalty
programme
membership

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Received January 2006
Revised September 2006
Accepted September 2006

Abstract

Purpose – In the retailing sector, consumers typically patronize multiple outlets, which leaves outlets striving to earn a greater portion of consumer expenditures. The purpose of this paper is to improve theoretical and empirical knowledge about the impact of retailing loyalty programmes on customer purchasing behaviour.

Design/methodology/approach – The effects of two loyalty programmes on customer behaviour are studied through marketwide panel data on supermarket purchases.

Findings – The impact of loyalty programme membership on customer purchase behaviour is significant.

Research limitations/implications – All behavioural indicators show that members and non-members of loyalty programmes demonstrate significantly different purchase behaviours, irrespective of other factors. The purchase intensity of cardholders, in terms of total and average shopping baskets, share of purchases, purchase frequency and inter-purchase time, is significantly higher than that of non-members throughout the entire three-year period and the trading areas. The findings require confirmation in other retailing sectors before they may be considered fully generalisable.

Practical implications – Retailers may apply the findings in their attempts to segment their target market, which enables them to allocate their marketing expenditures more effectively.

Originality/value – The study contributes to more “generalisable” knowledge by investigating marketwide scanner panel data about competitive purchasing, loyalty programmes and store locations.

Keywords Customer relations, Loyalty schemes, Customer loyalty, Consumer behaviour

Paper type Research paper

Introduction

Customer relationships have been increasingly studied in the academic and professional marketing literature (Morgan and Hunt, 1994; Grönroos, 1995). Customer retention rates and customer share of category purchase[1] are important metrics in customer relationship management (CRM) (Reichheld, 1996).

To maximize these metrics, many firms use relationship marketing instruments, and loyalty programmes or frequency reward programmes have become key marketing activities for many companies. Airlines reward travellers with free flights

The author expresses his warmest thanks to MarketingScan and an anonymous retailer for kindly providing data. He is also grateful to the anonymous reviewers.



European Journal of Marketing
Vol. 42 No. 1/2, 2008
pp. 87-114

© Emerald Group Publishing Limited
0309-0566
DOI 10.1108/03090560810840925

after they accumulate sufficient travel miles, and hotels offer customers who have stayed a certain number of nights free rooms. The common thread among reward programmes is the provision of (in)tangible benefits to customers as a reward for their repeated purchases of the company's product(s).

An intense interest in customer relationships is apparent in marketing practice and is most evident in firms' significant investments in CRM systems, such as loyalty programmes; in Europe, for example, the top 16 retailers collectively spent more than \$1 billion in 2000 to manage their programmes (Reinartz and Kumar, 2002; Reinartz, 2005). On the other hand, at the end of 2003, United Airlines estimated that its loyalty program (i.e. outstanding program awards) represented a liability of \$717 million (Yamanouchi, 2005; Shugan, 2005).

This relatively astounding level of spending has prompted some retailers, notably Safeway, to give up their loyalty schemes and thereby save \$75 million per annum (*The Wall Street Journal*, 2000). Other stores, such as E. Leclerc in France, continue to expend their marketing money by devoting approximately €18 million to managing their programmes (Meyer-Waarden, 2004).

Given these figures, the industry desperately needs rigorous empirical evidence regarding the effectiveness of loyalty programmes and other CRM tools. Furthermore, in 2004, the Marketing Science Institute (MSI, 2004) raised the topic of CRM and its associated issues to the status of its primary research priority. Because MSI's importance ranking reflects the opinion of both managers and academics, the void in both explanations and predictions pertaining to such issues is obvious. The *Journal of Retailing* even devoted a special issue to customer loyalty to stimulate research on topics currently prominent in the minds of retailers, such as loyalty programs, drivers of store loyalty, and so forth (Grewal *et al.*, 2004).

Despite all this strong interest, scarce empirical academic work has investigated the potential impacts of loyalty programmes on real buyers' behaviours. Although rich theoretical literature defines the economics of these programmes (i.e. driven by their impact on sales; Kopalle and Neslin, 2003), minimal empirical research investigates the sales impact itself, and that which does exist provides mixed and contradictory evidence (Dowling and Uncles, 1997; Meyer-Waarden, 2007). Thus, despite the progress made in recent studies, much remains to be done (Bolton *et al.*, 2004), because much of the ambiguity of these results relates to data (i.e. limited use of competitive information) and methodology limitations that hinder proper assessments of the effects of loyalty programmes. Indeed, prior studies have used self-reported, and/or cross-sectional data. Such data cannot establish a causal relationship; longitudinal data rather than cross-sectional data should be used to establish the causal relationship between customer behaviour and loyalty programmes.

In response to the scarce empirical evidence and ambiguity in the results, supplementary investigations that take such limits into account clearly are necessary. This study investigates the extent to which loyalty card programmes offered by primary grocery stores influence customer purchase behaviour in a non-contractual retailing context and thereby contributes to more "generalisable" knowledge by investigating marketwide scanner panel data about competitive purchasing, loyalty programmes and store locations. We organize this article as follows: first, we elaborate on our framework and discuss previous research. Second, we describe our method, including the research setting and data collection. Third, we describe our analysis and

results. We conclude with a discussion of implications for both researchers and practitioners and suggestions for further research.

Conceptual framework

Marketing theory and practice have become more and more customer centred, and managers have increased their emphasis on long-term client relationships (i.e. CRM), because loyalty, stronger relationships and therefore longer customer lifetimes likely are associated with a greater degree of cross-buying, a more significant level of transactions and therefore higher profits (Bolton *et al.*, 2004; Gupta *et al.*, 2004).

Researchers organize CRM according to the customer lifecycle because a customer's duration with a firm generally is not perpetual. Consumers may become dissatisfied, find better value elsewhere (Oliver, 1999) or undertake changes that cause them to lose the need for the product. Companies therefore search to influence customers across their lifecycles through adequate acquisition, development and retention strategies. One such strategy designed to develop customer relationships coincident with their lifecycles, stimulate product or service usage and retain and encourage repeat purchase behaviour is loyalty card programmes.

Definition of a loyalty card programme

In line with previous research (Sharp and Sharp, 1997; Yi and Jeon, 2003), we define a loyalty card programme as an integrated system of marketing actions that aims to make customers more loyal by developing personalised relationships with them. Relationship marketing focuses on the customer, in the sense that the firm seeks to create long-term business relations with existing prospects and customers (Grönroos, 1995). Developing consumer loyalty schemes thus becomes a principal concern of firms in their efforts to identify, maintain and increase the output of the best customers through a value-added, interactive and long-term-focused relationship (Meyer-Waarden, 2004). Thus, loyalty programmes allow for the creation of a relationship that is based on interactivity and individualisation, assuming they are accompanied by the personalisation techniques of direct marketing, and communication. In turn, they become strategic tools for managing customer relationships and heterogeneity. By relying on customer behaviour information recorded by loyalty cards, they serve as instruments of discrimination and individualisation of the marketing mix. Insofar as firms can personalise services and products, they may practice price discrimination on a larger scale (Narasimham, 1984; Shapiro and Varian, 1998), because they can identify the more price-sensitive buyers who tend to engage in more extensive search, clip coupons and redeem more rebates. On the other hand, with its complex rules, a loyalty card programme often discourages the redemption of rewards by more price-insensitive purchasers, so the firm may sell to a broader range of customers (i.e. both price-sensitive and price-insensitive buyers) without significantly lowering its price to price-insensitive buyers. Overall, the loyalty programme provides gratification to those who require rewards for purchases and avoids additional costs for those who would buy even without them.

Furthermore, to create switching costs (Carlsson and Löfgren, 2006), lengthen the relationship and encourage cross- and/or up-selling possibilities, loyalty programmes base customer rewards on cumulative buying and aim to develop repeat purchase

behaviour. For example, earned miles or points usually are not transferable to another firm if the customer stops purchasing from the focal company. Moreover, psychological, sociological and relational drivers enhance customers' trust, affective commitment and attachment to the organization (Morgan and Hunt, 1994) and thereby entail higher switching costs. Loyalty programmes can induce feelings of intelligence and pride about having achieved or won something without having to pay the normal price (Kivetz and Simonson, 2002), as well as a sense of appreciation among customers who relate rewards to being a preferred or special customer. Those who become members of loyalty programmes likely identify more strongly with the company (Oliver, 1999), which is especially beneficial in industries in which consumers purchase frequently and distinctions among suppliers are low (Bhattacharya and Sen, 2003).

The "success chain" for loyalty programmes

The stimulus-organism-reaction (S-O-R) paradigm (Blackwell *et al.*, 2005) offers a possible explanation of how loyalty programmes theoretically act on buyer behaviour: Rewards (S) launch internal cognitive treatments, such as motivation, learning and decision processes, within purchasers (O) and then stimulate them to react (R; e.g. purchase more, change behaviour). Repeat purchase behaviour or loyalty (R) therefore should relate positively to loyalty programme membership and the magnitude of the gratification (S). Nevertheless, disparities in individual purchase behaviour likely result from inter-individual heterogeneity with respect to loyalty card possession, as customers have different social origins and buying powers and are differently motivated; moreover, they do not devote equal efforts to obtaining a given reward (as our discussion of price discrimination theory highlights; Shapiro and Varian, 1998). Therefore, buyers weigh the value obtained from the reward or loyalty card against associated expenses (O). Because households simultaneously attempt to minimise their cost function and maximise their utility function (Thaler, 1985), a reaction (R), such as a purchase decision, change in buying behaviour or repeat purchase, occurs only if the consumer perceives the utilities of the rewards (e.g. financial advantages, privileges, points, relationship) as higher than the costs (e.g. joining expenses, exposing personal data to the firm, points collection, repeat purchase obligations, switching costs).

However, according to the literature, limited and contradictory empirical evidence challenges this "success chain" and the efficacy of loyalty schemes (see Table I). Some investigations report a significant impact (Nako, 1997; Passingham, 1998; Bolton *et al.*, 2000; Smith *et al.*, 2003; Lewis, 2004; Taylor and Neslin, 2005; Kivetz *et al.*, 2006), whereas others contend it is difficult to change established behavioural patterns with the types of reward systems that are prevalent today (Dowling and Uncles, 1997; Sharp and Sharp, 1997; Reinartz, 1999; Benavent *et al.*, 2000; Leenheer *et al.*, 2003; Mägi, 2003; Meyer-Waarden, 2004, 2007; Meyer-Waarden and Benavent, 2006a). These latter researchers express doubts about the benefits of loyalty card programmes and suggest that in a competitive market, good programmes get imitated, which means that the end result will be a return to the initial competitive situation but with increased marketing costs. Ubiquitous loyalty schemes in retailing and their frequent connection to promotional devices even may have negative effects on purchase behaviour.

The ambiguity in these results relates, at least partially, to data and methodology limitations that hinder the proper assessment of the effects of loyalty programmes. For example, investigations have been realized from either aggregated panel data (Nako,

Authors	Sector, country	Dependant variables	Research design, sample, method	Results
Sharp and Sharp (1997) Nako (1997)	Grocery retailing, Australia Airlines, USA	Market share, sole buyer, repeat purchase and frequency Market share, basket value, sensitiveness competitors' offers	Self-reported panel survey ($n = 745$), Dirichlet model Declarative panel ($n = 650$), multinomial logit	Little to no impact for all Dirichlet indicators Stronger airline utility with loyalty programme than through brand image, number of destinations, on-board service. Correlation between programme membership and length of flight route; frequent flyers less price sensitive +4.8% turnover; +3.5% traffic; negative impact on margin if massive card distribution; no impact on purchase volume or value – 10% attrition, +300% frequency, +200% purchase value; no impact on number of transactions even if temporarily dissatisfaction
Benavent <i>et al.</i> (2000)	Category killer retailing, France	Turnover; margin, traffic, purchase volume and value, inter-purchase time	Point of sale (POS) scanner data (150,000 purchasing acts), ordinary least square (OLS) regression	
Bolton <i>et al.</i> (2000)	Credit cards, Europe	Retention, purchase frequency, purchase value, dissatisfaction	Credit card usage and self-reported data ($n = 405$), logistic and Tobit regression	
Reinartz (1999) Meyer-Waarden (2004, 2006)	Charge card mail-order firm, USA Grocery retailing, France	Lifetime duration Market share, repeat purchase rate, basket, frequency, inter-purchase time, switching behaviour	Company database ($n = 9,167$, two years), Pareto/NBD model Panel and POS data ($n = 5,476$; 3 years), Dirichlet model, ANOVA	No impact on lifetime; promotion creates opposite effect Little impact on all Dirichlet indicators. Before/after card subscription comparison: no long-term and weak short-term impact on purchasing behaviour 3/7 programmes not effective; 4/7 programmes give too much value. Effectiveness increases with value given but diminishes with higher price discounts
Leenheer <i>et al.</i> (2003)	Grocery retailing, Netherlands	Share-of-wallet	Panel data ($n = 1,926$; 2.5 years), Tobit-II model	

Table I.
Comparison investigation

Table I.

Authors	Sector, country	Dependant variables	Research design, sample, method	Results
Mägi (2003)	Grocery retailing, Sweden	Share-of-purchase and share-of-visits to the focal store	Self-reported survey ($n = 643$, 4 weeks), OLS regression	Mixed support for impact of loyalty cards on customer behaviour
Yi and Jeon (2003)	Perfumery and restaurant, USA	Loyalty to programme and brand	Experimental design ($n = 262$), structural equation modelling (SEM)	Impact of program's perceived value on programme and brand loyalty
Lewis (2004)	Online grocery retailing, USA	Basket, customer purchase incidence rate, revenues, number of orders	Online purchase data ($n = 1.058,1$ year), discrete choice programming	Impact of loyalty programme on basket, purchase incidence rate, revenues, number of orders
Taylor and Neslin (2005)	Grocery retailing, USA	Basket, purchase incidence rate, revenues, number of orders	Purchase data ($n = 776$, two years)	Increase sales points pressure and rewarded behaviour impact
Kivetz <i>et al.</i> (2006)	Coffee and music on internet, USA	Inter-purchase time	Experimental design, ($n = 952$). Tobit and logit models	Progress toward goal induces purchase acceleration. Acceleration toward goal induces retention
Meyer-Waarden (2007)	Grocery retailing, France	Lifetime duration and share-of-purchase in the focal store	Panel data ($n = 2,476$, 397,000 purchase acts, three years), GLM, survival models	Positive effects on lifetimes and share-of-purchase. Multiple card memberships reduce lifetime. High share-of-purchase increases lifetime duration

1997; Sharp and Sharp, 1997), and thereby fail to take into account customer heterogeneity, or internal store data, which at best can make only limited use of competitive information about purchasing behaviour because they do not consider clients' frequent purchases from different companies (Passingham, 1998; Benavent *et al.*, 2000; Bolton *et al.*, 2000; Lewis, 2004; Taylor and Neslin, 2005; Kivetz *et al.*, 2006). Another considered source has been declarative survey data, whose reliability problems are well documented (Mägi, 2003; Yi and Jeon, 2003). Finally, some studies test proprietary credit cards (Reinartz, 1999; Bolton *et al.*, 2000) which offer added convenience and buying power and target principally low-income customers.

In the following section, we investigate the workings of loyalty programmes in greater detail to enable us to formulate our hypotheses.

Impact of loyalty programmes on purchase behaviour

From a theoretical point of view, loyalty programmes might have two possible effects on purchase behaviour: differentiation loyalty and purchase loyalty. Differentiation loyalty decreases the degree of sensitivity customers have towards competing offers or prices and thereby prompts customers to pay higher average prices for goods they usually purchase, buy them in higher quantity or choose better quality products and/or more expensive brands (Reichheld, 1996). Nako (1997) and Bolton *et al.* (2000) argue that a reward programme, along with excellent service and quickly earned rewards, will help take consumers' minds off the price; results from both studies include programmes' impact on customer purchasing and resistance to counter-persuasion[2]. By patronizing an outlet more often and more regularly, the consumer is confronted with competitors' price less frequently; because he or she therefore lacks a comparison, the consumer naturally becomes less sensitive to it.

However, as in most markets, especially the retailing market we investigate, an increase in differentiation loyalty probably cannot occur without an accompanying increase in purchase loyalty (Sharp and Sharp, 1997). We therefore focus only on the impact of loyalty programmes on purchase loyalty, with the assumption that loyalty schemes favour repeat purchase behaviour and retention if they provide higher levels of usefulness. Therefore, purchase loyalty should be created first through a short-term "points pressure" impact and second through a long-term "rewarded behaviour" impact (Taylor and Neslin, 2005).

In Figure 1, period $n-1$ represents the customer's baseline purchase rate. In period n_0 , loyalty cardholders, especially forward-looking consumers, increase their purchase rates to meet the requirements for a reward – that is, the points pressure impact. This impact may be produced by a combination of customer switching costs (Carlsson and Löfgren, 2006) and future orientation (i.e. care about the future reward that may be gained by accumulating points). Thus, switching costs and future orientation stimulate loyalty cardholders to increase their spending during period n_0 . That is, loyalty programme members make purchase decisions in period n_0 to maximise their utilities in period n_0 , as well as the utilities they may expect in future periods as a result of this decision. They then realize that the reward enhances their future utilities and that they need to accumulate the required "points" by increasing their purchases until the gratification has been earned. The customer might receive a reward at the end of period n_0 , depending on his or her purchase level during that period.

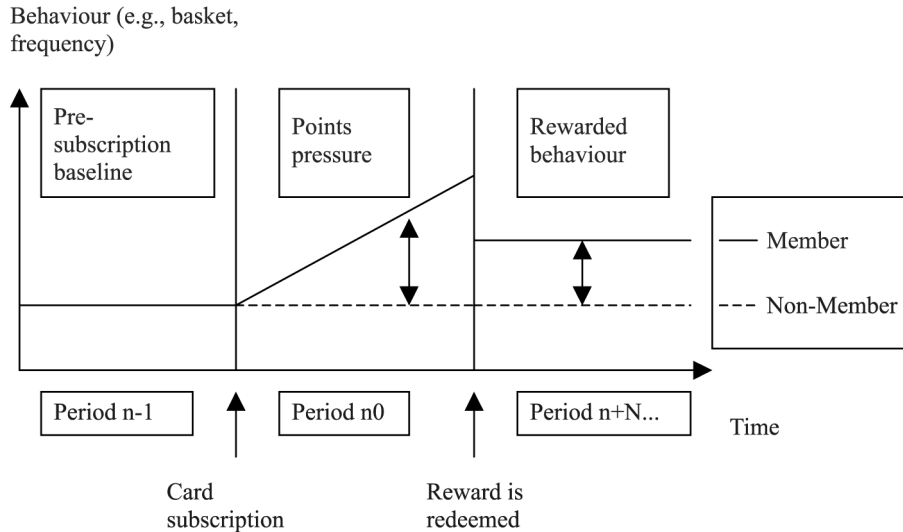


Figure 1.
Points pressure and
rewarded behaviour
effects

Source: Taylor and Neslin (2005)

The “rewarded behaviour” impact then entails purchases beyond the baseline levels, that is, after a programme member has received a reward, possibly as a result of behavioural learning reinforcement due to the reward (Blattberg and Neslin, 1990, ch. 2; Rothschild and Gaidis, 1981). To the extent that store patronage is rewarded, re-patronage likely will persist (as long as utilities are higher than costs). The purchaser must first perform the behaviour, then receive the reward, and then repeat the behaviour. The potential long-term impact of the reward is evidenced in period $n + 1, \dots, n + N$. Purchase levels could equal the baseline, which would mean no rewarded behaviour effect, or anything above that rate. Nevertheless, compared with loyalty programme members, customers who do not possess the loyalty card should demonstrate baseline purchase behaviour in all periods.

If there is no rewarded behaviour effect, the situation is similar to that depicted in a domain of sales promotion (Dekimpe and Hanssens, 1999), and purchase rates return to normal after the gratification has been earned. Although there is no guarantee the effect is permanent (Meyer-Waarden, 2004), the rewarded behaviour effect should operate for some time after the consumer receives a reward.

Points pressure and rewarded behaviour thus should create two purchase loyalty effects: a preference/attraction impact for the outlet if clients prefer the loyalty card's store and do not change their store visit frequency, and an increase/acceleration in purchase frequency effect, as observed for sales promotions (Blattberg and Neslin, 1990). Both Benavent *et al.* (2000) and Kivetz *et al.* (2006) indicate that the illusion of progress towards a reward goal induces purchase acceleration; thus, both points pressure and rewarded behaviour should coincide with a more important level of transactions as a result of cross-selling, customer purchase concentration, higher purchase frequencies, lower inter-purchase times and switching behaviour.

Despite existing contradictory empirical evidence and the limitations of previous studies, we expect that loyalty card holders are more likely to stay loyal, buy more, concentrate a larger share of their expenditures and repeat purchases in the focal outlet and be less inclined to visit competitors, because it seems intuitive that members of the loyalty programmes should perceive a higher level of usefulness (i.e. due to short-term, long-term and cumulative rewards) compared with the associated costs. In turn, there should be a positive association between loyalty card possession and purchase behaviour. We therefore hypothesise:

- H1.* Mean store basket values should be higher for loyalty programme members than for non-members.
- H2.* Total store basket values should be higher for loyalty programme members than for non-members.
- H3.* Store inter-purchase times should be lower for loyalty programme members than for non-members.
- H4.* Store purchase frequencies should be higher for loyalty programme members than for non-members.
- H5.* Store customer share of category purchases should be higher for loyalty programme members than for non-members.
- H6.* Store switching behaviour should be lower for loyalty programme members than for non-members.
- H7.* The number of visited stores should be lower for loyalty programme members than for non-members.

Method

Sample

For a proper assessment of loyalty programs' effectiveness, we employ competitive information about individual customer purchases in competitors' stores from the single-source BehaviorScan panel. The panel is representative of the French national population[3] and is based in Angers (France), a town with approximately 165,000 inhabitants.

The BehaviorScan panellists are chosen randomly and replaced every four years. For their panel participation, they receive purchase vouchers and sweepstakes as rewards. We extract a total of 475,000 purchase acts by 2,150 consumers active in the panel over a 156-week period (week 28/1998 to week 28/2001). We thereby smooth any variations in panel attrition rates or stores' recruitment and marketing strategies. Furthermore, we possess information about customers' memberships in loyalty programmes.

Purchases made by panel participants are recorded on a daily basis for seven stores in the area (five hypermarkets, S1-S5, with surface areas of 5,000-9,000 m², situated at town peripheries and intersections of major highways; two supermarkets, S6 in the city centre of 2,000 m² and S7 on the outskirts with 1,400 m²). These retail outlets represent 95 per cent of the fast-moving consumer goods sales in the area[4].

Table II and Figure 2 contain more information about the stores and their locations, loyalty programmes and market shares.

S6 and S7, which represent smaller supermarkets, are direct competitors, because of their geographical proximity, to bigger hypermarkets such as S1, S2 and S3. S5, which is on the other side of the Maine River, is quite isolated from all other competitors, with the exception of S4, which is directly across a bridge from it.

All large and small retail outlets except S6 offer loyalty programmes. S1 and S2 belong to the same retailing chain (RC1) and issue loyalty cards that are valid in either outlet. S3 and S4 also belong to a single company (RC2) with a joint loyalty scheme. We therefore have information about customer subscriptions to four loyalty programmes from seven stores. The features of all loyalty systems are similar, and all use loyalty cards for identification and registration. Typically, the programmes are free and provide price discounts through a promotion feature and rewards through a point-saving feature. The promotion feature gives price discounts on a varying set of

Table II.
Description of stores

Store	S1	S2	S3	S4	S5	S6	S7
Surface (m ²)	8,900	5,300	9,000	9,400	5,200	2,000	1,400
Market share (%)	20	12	15	25	11	11	6
Loyalty programme	Yes	Yes	Yes	Yes	Yes	No	Yes
External partners/multi-sponsor programme	Yes	Yes	No	No	No	–	No

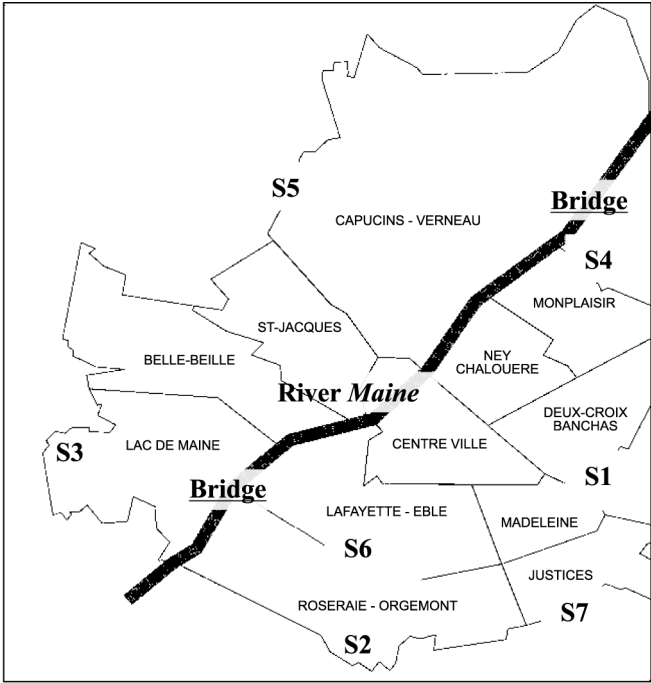


Figure 2.
Store locations

items, announced only within the store. The point-saving feature provides points that depend linearly on the amount customers spend. Customers also can earn points by buying certain promoted products or brands and if they pass through the checkout counter (i.e. if they simply buy, even if the purchase amount is low). Members must spend a considerable amount to reach the minimum redemption threshold to exchange points for gifts or purchase vouchers (generally, the return/rebate corresponds to 0.1-1 per cent of the purchase amount). In addition, loyalty programmes give other rewards such as lotteries and direct mailings. Receipts show the number of points the customer has saved and the total discount earned with the loyalty card.

Approximately 66 per cent of the panel households are members of at least one loyalty programme, and the duplication rate of memberships is substantial: 27 per cent of the panel households have two or more loyalty cards, 6 per cent have three, and 1 per cent have four or more.

Measures

Although there is general agreement throughout academic literature that loyalty is a two-dimensional construct involving relative attitude and repeat patronage (Jacoby and Chestnut, 1978; Dick and Basu, 1994), we focus on loyalty programmes' impact on repeat purchase behaviour (purchase loyalty) specifically, for several main reasons. First, in practice, the loyalty schemes we investigate reward repeat purchase behaviour alone, not attitudes, because they are based on classic promotional techniques with delayed or immediate rewards. Second, in grocery retailing, purchasing behaviour is characterised by high buying frequency, inertia and proximity (Kahn and Schmittlein, 1992; Chintagunta, 1998), in which context the attitudinal concept may be relatively fragile (Macintosh and Lockshin, 1997). Although Dick and Basu (1994) conceptualise a two-dimensional loyalty construct, they do not operationalise or provide empirical evidence of its predictive ability. East *et al.*'s (2000) research on loyalty in supermarket shopping and Garland and Gendall's (2004) work in the banking sector confirm the lack of empirical support for the idea that attitudes can predict customer loyalty behaviour. At least in the French retailing context, in which retailers are similar in terms of their offerings (i.e. products, brands, loyalty programmes, prices) and real differentiation does not exist, it is unlikely customers choose stores because of their preferences or positive attitudes.

We therefore use the following behavioural measures. Mean basket in a given store represents the average of buyers' purchases (in Euros). Total store basket is the average sum of all buyers' purchases in a given store, whereas total category basket is the average sum of all purchases realized in the whole category of stores (i.e. S1-S7). We compute purchase frequency in a given store as the number of purchases in a particular store and inter-purchase time as the time gap between two consecutive purchases by a household in the same store. The customer share of category purchases in the outlet reflects the proportion of the household's purchases in the outlet compared with its total category expenses in all stores S1-S7 and therefore indicates customers' primary store. To calculate consecutive switches to competitors' stores, we take the average proportion of store changes between two consecutive purchases. Finally, the number of visited stores is the mean number of outlets a household visits. Our indicators are multidimensional and reflect purchase intensity, attraction and competitive switching behaviours at that point in time.

We also consider the issue of trading areas, because geographical characteristics can explain an important portion of customers' outlet choices (Kahn and Schmittlein, 1989; Bell *et al.*, 1999). We compute the distance variable as the number of kilometres between each household and store, as measured from the centroid of the store's zip code to the centroid of the household's zip code (Bell *et al.*, 1998; Allaway *et al.*, 2003). In the BehaviorScan test market, the effects of location should differ. To eliminate geographical bias, the primary (distance less than 4 km from the store), secondary (4-8 km from the store) and tertiary trading areas (more than 8 km from the store) are outlined for each store. Panellists located in each area therefore experience similar competitive situations (e.g. distance from one of the seven retail outlets, number of competitors), which enables us to compare loyalty card members with non-members in unbiased conditions in which all other characteristics are equal. For space considerations, we focus on hypermarkets S1 and S4, the market leaders in terms of share and space, and supermarket S7, the smallest actor.

The primary trading area for S1 contains 266 loyalty scheme members and 803 non-members. In the secondary and tertiary trading areas of S1, respectively, there are 198 and 151 S1 cardholders and 398 and 800 non-members. For S4, the primary trading area includes 249 members and 384 non-members, the secondary encompasses 340 and 370, and the tertiary contains 155 cardholders and 552 non-members.

Store S7's primary trading area involves 208 loyalty scheme members and 388 non-members. In its secondary and tertiary trading areas, respectively, 166 and 289 S7 card holders and 122 and 252 non-members reside.

Modelling methods

To validate our hypotheses, we use a linear model (ANOVA with repeated measures) at an individual level to take customer heterogeneity into account (Kenward, 1987). This approach enables us to test behavioural differences (mean basket, purchase frequency, inter-purchase time, share of category purchases) simultaneously with whether consumers hold a loyalty card from S1 and S4, time (year 1 to year 3) and trading areas. Thus, we can determine whether trends remain the same over the entire observation period and in all areas.

We compare loyalty card members and non-members at two levels: an inter-group comparison of the average values of behavioural indicators μ with the mean behavioural variables μz for every trading area and an intra-group comparison of the mean behavioural variables μlin for each year to reveal any evolutions.

We consider hypothesis *H0*, according to which the card would have no effect and variations in purchase behaviour would be systematic. In this case, variations occur for both groups and thus reflect a systematic evolution over time or trading areas, rather than an effect of the loyalty cards:

- μ (loyalty card scheme member) = μ (non-member loyalty card scheme).
- μz (loyalty card scheme member) = μz (non-member loyalty card scheme).
- μlin (loyalty card scheme member) = μlin (non-member loyalty card scheme).

In contrast, *H1* suggests variations in purchase behaviour are not systematic, observed only for cardholders over all three years and in all trading areas, which would indicate that purchase behaviour is driven by loyalty scheme membership, not systematic evolutions over time.

- μ (loyalty card scheme member) $>$ μ (non-member loyalty card scheme).
- μz (loyalty card scheme member) $>$ μz (non-member loyalty card scheme).
- μ_{lin} (loyalty card scheme member) $>$ μ_{lin} (non-member loyalty card scheme).

A logistic regression that uses the individual household records of purchase enables us to test the switching rates.

Results

We first attempt to examine the general effects of loyalty cards, as well as the scale and type of their impact on purchase behaviour. In addition, we test the stability of these effects for each store by time and trading area. To save space, we present the results for stores S1, a market leader, and S7, the smallest actor, in the main text and offer conclusions pertaining to S4 in the Appendix.

In the tables that follow, we provide the behavioural indicators by year and trading area, based on the ANOVA with repeated measures. Cardholders for retail outlets demonstrate significantly higher purchase intensity and loyalty than non-members of the schemes in each area over the entire three-year period.

A simultaneous comparison of the curves for the average shopping basket in each group μ within each trading area μz for each time interval μ_{lin} highlights the significant differences between those who hold S1 loyalty cards and those who do not. Testing the parameters of the model implies highly significant indicators compared with inter-group variance for loyalty card and zone ($p < 0.0001$) (with the exception of the number of stores visited; $p > 0.1$). The mean and total shopping basket values and share of category purchases in S1 are significantly higher for cardholders than are those of non-members, independent of the trading area (primary, secondary, tertiary) or the period analysed. Moreover, the differences between the two groups are stable, regardless of the area studied. In contrast, intra-group variation is significant for the time \times loyalty card interaction ($p < 0.05$), which implies the indicators increase during period 2 for the loyalty scheme members and remain relatively constant for non-members – possibly because the loyalty card prompted increased purchasing in the store. Finally, the zone \times loyalty card interaction is significant ($p < 0.05$); that is, the difference between a loyalty card member in a principal area and a non-member from the same area is proportionally higher than that between the two groups in the secondary and tertiary areas. Cardholders from the principal area seem to visit the store to conduct their everyday shopping, whereas those in other areas shop there less frequently and use it mainly for “fill-in” shopping. We summarise the complete findings for store S1 in Tables III and IV.

For the smallest actor S7, the differences again are highly significant when we compare inter-group variance for members versus non-members and zone ($p < 0.0001$). The intra-group variation also is significant for the time \times loyalty card interaction ($p < 0.05$), which indicates that the indicators increase with time for loyalty scheme members and remain relatively constant for non-members. And again, the number of stores visited does not differ significantly between the two groups ($p > 0.1$) (see Tables V and VI).

With the regard to S4, the differences between loyalty scheme members and non-members are highly significant for all loyalty indicators ($p < 0.01$), with the exception of the number of visited stores and switching behaviour (see Appendix).

Store 1	Member	Year 1		Year 2		Year 3	
		Yes	No	Yes	No	Yes	No
Average store basket	Zone 1 (€)	79	60	79	61	79	63
	Zone 2 (€)	61	53	62	51	62	51
	Zone 3 (€)	61	49	61	47	62	48
Total store basket	Zone 1 (€)	2,446	850	2,384	910	2,286	923
	Zone 2 (€)	1,082	425	1,142	519	1,081	484
	Zone 3 (€)	832	218	906	262	875	258
Share of category purchases	Zone 1 (%)	61	31	60	30	61	31
	Zone 2 (%)	33	17	33	16	31	15
	Zone 3 (%)	21	9	25	9	24	19
Purchase frequency	Zone 1	31	14	30	13	29	12
	Zone 2	18	8	17	8	15	7
	Zone 3	14	4	13	4	12	4
Inter-purchase time	Zone 1	10	22	11	25	11	26
	Zone 2	18	39	19	40	20	43
	Zone 3	23	70	24	82	26	89
Number of visited stores	Zone 1	2.4	2.4	2.0	1.9	2.2	2.2
	Zone 2	2.6	2.5	2.3	2.2	2.5	2.5
	Zone 3	2.7	2.5	2.2	2.1	2.5	2.3
Switching	Zone 1 (%)	46	72	48	73	47	72
	Zone 2 (%)	79	88	81	89	80	90
	Zone 3 (%)	82	93	81	92	85	94

Table III.
S1 purchase behaviour
for loyalty card members
and non-members

The logistic regressions clearly highlight that the switching rates for S1, S4 and S7 cardholders are lower than those for non-members of their schemes (see Tables VII, VIII, and the Appendix). The predictive validities of the models are good (86 per cent, 85 per cent and 75 per cent), and being a member of the S1, S4 or S7 loyalty programme reduces switching probabilities by 4 per cent, 6 per cent and 15 per cent, respectively, with significant differences ($p < 0.01$).

These results clearly support *H1-H6* and the claim that members of loyalty programmes display higher purchase intensities than do non-members. Loyalty cardholders display higher mean and total store basket values, purchase frequencies and share of category purchases; lower inter-purchase times; and decreased store switching behaviours, compared with non-members. However, we do not find support for *H7*; the number of visited stores is not lower for loyalty programme members than for non-members.

We therefore may conclude that the behaviour of the two groups differs significantly and that loyalty programme members are heavier purchasers than non-members throughout the three year-period and in all trading areas.

Discussion and managerial implications

We have studied the effects of three loyalty programmes on customer behaviour using marketwide panel data about supermarket purchases. Different tests, per year and per trading area, lead us to draw the following conclusions: First, this research supports some previous findings and therefore provides important empirical generalisations (Nako, 1997; Passingham, 1998; Bolton *et al.*, 2000; Leenheer *et al.*, 2003; Smith *et al.* 2003; Lewis, 2004; Taylor and Neslin, 2005; Kivetz *et al.*, 2006). Our main finding shows

S1	Time			Time × Card			Card		
		Time	Time × Zone	Intra-group variance	Time × Card	Time × Card × Zone	Zone	Inter-group variance	Zone × Card
Average store basket	F	1.18 ns	0.22 ns	3.0 *	0.73 ns	0.73 ns	17 **	40 **	2 *
Total store basket	F	8.3 **	0.34 ns	0.10 *	0.97 ns	0.97 ns	65 **	118 **	3 *
Share of category purchases	F	6.7 **	0.6 ns	2.1 *	0.2 ns	0.2 ns	77 **	86 **	0.96 *
Purchase frequency	F	15 **	0.44 ns	0.66 *	0.56 ns	0.56 ns	94 **	202 **	4 *
Inter-purchase time	F	74 **	2 *	3 *	1 ns	1 ns	64 **	107 **	5 *
Number of visited stores	F	229 **	6 **	1.2 *	0.5 ns	0.5 ns	12 **	2 ns	1 ns
Switching	F	5.9 *	1.7 ns	0.2 *	0.7 ns	0.7 ns	124 **	58 **	6 *

Notes: * $p < 0.05$; ns: non-significant ** $p < 0.01$; *** $p < 0.01$

Table IV.
S1 intra- and inter-group
variances

Store 7	Member	Year 1		Year 2		Year 3	
		Yes	No	Yes	No	Yes	No
Average store basket	Zone 1 (€)	60	46	65	48	62	49
	Zone 2 (€)	36	42	42	42	49	44
	Zone 3 (€)	39	36	42	37	24	42
Total store basket	Zone 1 (€)	1,376	920	1,817	1,139	1,673	1,148
	Zone 2 (€)	109	114	253	267	337	273
	Zone 3 (€)	44	55	129	140	56	140
Share of category purchases	Zone 1 (%)	45	38	45	41	44	42
	Zone 2 (%)	12	10	7	11	10	12
	Zone 3 (%)	4	6	4	5	2	30
Purchase frequency	Zone 1	35	18	38	18	37	18
	Zone 2	3	3	3	2	2	2
	Zone 3	1	1	1	1	1	1
Inter-purchase time	Zone 1	9	17	8	17	8	17
	Zone 2	102	113	113	135	125	146
	Zone 3	283	209	312	264	411	318
Number of visited stores	Zone 1	2.6	2.6	2.3	2.2	2.5	2.5
	Zone 2	2.5	2.4	2.1	1.9	2.3	2.2
	Zone 3	2.5	2.5	2	2	2.2	2.2
Switching	Zone 1 (%)	55	60	55	59	57	57
	Zone 2 (%)	96	89	93	90	90	88
	Zone 3 (%)	98	93	95	94	95	91

Table V.
S7 purchase behaviour
for loyalty card members
and non-members

that loyalty programmes affect purchase behaviour for both market leaders and smaller retailers. Second, our behavioural indicators show that loyalty programme members and non-members demonstrate significantly different purchase behaviour, irrespective of the time and trading area (in support of *H1-H6*). Specifically, cardholders have significantly higher purchase intensities in terms of total and average shopping baskets, share of category purchases, purchase frequencies and inter-purchase times than do non-members over the entire three-year period and throughout the trading areas.

The “success chain” for loyalty programmes based on the stimulus-organism-reaction paradigm (Blackwell *et al.*, 2005) can explain our findings: Through integrated marketing systems and economic, psychological, and sociological rewards (S), loyalty schemes launch internal cognitive treatments, such as motivation, learning and decision processes, within purchasers (O) and then increase customer purchase intensity and repeat purchase behaviour (R). They tend to increase sales through at least a points pressure mechanism, or short-term impact (Taylor and Neslin, 2005), and thereby create purchase concentration and purchase acceleration effects (Lewis, 2004) in the share of category purchases and purchase frequencies, as well as inter-purchase times.

However, we cannot conclude with certitude that loyalty schemes and their associated gratifications (S) change established behavioural patterns (R) over the long term by creating rewarded behaviour mechanisms (Taylor and Neslin, 2005) as some authors have contended (Dowling and Uncles, 1997; Sharp and Sharp, 1997; Reinartz, 1999; Benavent *et al.*, 2000; Leenheer *et al.*, 2003; Mägi, 2003; Meyer-Waarden, 2004, 2007; Meyer-Waarden and Benavent, 2006a). Indeed, long-term purchase behaviours in

S7	Time			Time × Zone			Time × Card			Time × Card × Zone			Zone			Card			Zone × Card		
	F	2.2		1.8			2.8			3.2			1.1			12			3.3		
Average store basket	F	ns		ns			*			ns			**			**			*		
Total store basket	F	**		1.7			*			2.8			**			**			*		
Share of category purchases	F	**		ns			*			ns			**			**			*		
Purchase frequency	F	**		ns			*			ns			**			**			*		
Inter-purchase time	F	**		3.3			*			1.3			**			**			*		
Number of visited stores	F	**		14			*			ns			**			**			*		
Switching	F	*		0.46			*			2.1			**			73			ns		
				ns			*			ns			**			ns			*		
							*			1.8			**			10.1			*		
							*			ns			**			**			*		

Notes: ** $p < 0.01$; * $p < 0.05$; ns: non-significant

Notes: **; $p < 0.01$; * $p < 0.05$; ns: non-significant

Table VI.
S7 intra- and inter-group
variances

Table VII.
S1 switching
probabilities (zone 1)

	Parameter estimate (SE)
Loyalty card S1	– 0.36 (0.06) **
Intercept	– 1.49 (0.05) **
– 2 log likelihood	10548.27 with 1 df ($p < 0.0001$)
Good model classifications	86%
Switching probability member	14%
Switching probability non-member	18%
Notes: * $p < 0.05$; ns: non-significant; ** $p < 0.01$;	

Table VIII.
S7 switching
probabilities (zone 1)

	Parameter estimate (SE)
Loyalty card S7	– 0.93 (0.04) **
Intercept	– 0.90 (0.02) **
– 2 log likelihood	11478.27 with 1 df ($p < 0.0001$)
Good model classifications	75%
Switching probability member	14%
Switching probability non-member	29%
Notes: * $p < 0.05$; ns: non-significant; ** $p < 0.01$	

the retailing context and disparities in individual purchase behaviour seem based more on inter-individual heterogeneity as well as heuristics related to the customer's distance from the store, inertia, comfort, satisfaction, habits, personal characteristics and origins (e.g. social, buying powers) than on loyalty programmes (Kahn and Schmittlein, 1989). The rejection of *H7* (i.e. loyalty members use more limited purchase repertoires than non-members) thus suggests the importance of inertia, proximity, convenience and fill-in shopping in food retailing, because the switching costs for most grocery retailers' loyalty programmes tend to be low (Kahn and Schmittlein, 1989; Chintagunta, 1998). Furthermore, existing research indicates that different customers do not devote equal efforts to obtaining a given reward, and that the heavier, more frequent, more loyal buyers for a store enrol in loyalty reward schemes earlier (Meyer-Waarden, 2004). These early participants also tend to live closer to the store (Allaway *et al.*, 2003). This trend probably occurs because rewards (S) that accumulate over the long term are mainly of interest to store-loyal and geographically closer clients (who must not change substantially their behaviour (R) and who perceive the utilities of the rewards as higher than the costs; Thaler, 1985). Thus, even if some multiloyal customers switch provisionally from less promoted stores to those that advertise their reward scheme with strong sales promotions, they stay temporarily as the rewards, not the store features, become the principal motivation for their loyalty (i.e. short-term points pressure mechanism). Once they have earned the gratification, the principal

purchase reason disappears, and buyers probably switch back to their habitual stores (Rothschild and Gaidis, 1981).

In contrast, as we do use behavioural measures (and no indicators of attitudinal loyalty), it is difficult for us to separate real and spurious loyalty (i.e. high repeat patronage, but low relative attitude towards preferred stores; Dick and Basu, 1994). In that theory suggests loyal programme members are less likely to visit other stores than are non-members. Nevertheless, this last supposition does not seem very likely, because, as we said higher, the main retail outlets are often situated close to the panellists' homes, and the context of this study favours spurious, inertial loyalty (Chintagunta, 1998). Indeed, O'Malley (1998) as well as Huddleston *et al.* (2004), confirm that food store customers exhibit spurious loyalty. Thus, purchase involvement is generally low, and buyers perceive little gain (S) from switching to new stores (R), because retailers are similar in terms of their offerings (i.e. products, brands, loyalty programs, prices) and lack any real differentiation[5]. Purchase decisions therefore (as we indicate above) are more related to the distance from the store, portfolio behaviour and habits rather than relationships with, liking for or positive attitudes towards retailers (Kahn and Schmittlein, 1992). In this context, we find little empirical support for the ability of attitudes to predict customer loyalty behaviour (Macintosh and Lockshin, 1997; East *et al.*, 2000; Garland and Gendall, 2004). Furthermore, O'Malley (1998), Huddleston *et al.* (2004) as well as Whyte (2004), suggest that these programmes are not very successful in translating spurious loyalty to commitment, as we noted previously, the retailers investigated herein reward repeat purchase behaviour, not attitudes.

Finally, we can conclude, when they are ubiquitous, retailing loyalty schemes even may entail negative impacts on purchase behaviour through customer saturation (Dowling and Uncles, 1997; Meyer-Waarden and Benavent, 2006a). The authors argue that competitive parity prevails in many retail markets, making it extremely difficult for one retailer to move ahead of the pack without growing its overall market share. A prime reason for this failure is the proliferation of loyalty schemes in most markets (with a greater degree of imitation than innovation), which has destroyed a key reason for loyalty, namely, distinctiveness and differentiation. Rewards (S) are then not interesting and differentiated enough to stimulate buyers to purchase more or to change behaviour (R). Indeed, for many stores, loyalty programmes appear fundamentally similar, unlike that offered by the United Kingdom's Tesco grocery retailer, which is based on dynamic, data-driven customer knowledge (Humby *et al.*, 2004).

The results of this study thus may help managers improve their decisions with regard to the effectiveness of loyalty programmes. Valid assessments demand studies that use marketwide data and extensive customer background information. Because individual companies usually possess only company-specific data, cooperation with market research companies that conduct consumer panels is an good option.

In addition, we note that consumer segments likely react differently to loyalty programmes, as they do to sales promotions (Mela *et al.*, 1996); consumer characteristics (e.g. shopping orientation, sensitivity to sales promotions) influence the strength and direction of the impact of loyalty programmes on repurchase behaviour. Consequently, a more thorough analysis of loyalty cards' effects and determinants at the individual level is required. For example, Van Heerde and

Bijmolt (2005) show that loyalty programme non-members tend to be much more responsive to price discounts than are members.

Such segmentations would provide a better measure of consumers' sensitivity to loyalty-developing actions and an assessment of customers' potential value. Loyalty schemes therefore offer a strategic tool for CRM that provide many opportunities for individualisation. The principal purpose of loyalty programmes is to select, identify and segment heavy users who are sensitive to targeted promotions or certain product categories and thereby provide an improved allocation of resources. These findings in turn have important implications for managing customer portfolios and customer behaviour. First, they suggest great possibilities for the extent to which customer shares might be created through loyalty schemes. Second, retailers can gather shoppers' information, including purchasing behaviour and store distance, and use these data to segment their target market on the basis of customer vulnerabilities, deal proneness or price sensitivities. To manage groups effectively, retailers must know how their marketing activities, such as promotions, affect various groups' contributions to revenues. With this information, retailers can undertake tailored strategies and incentives (e.g. hyper-targeted promotions and communications, personalised in terms of the marketing mix and price discrimination) to appeal to different segments and restore or enhance their patronage. Such a differentiated system can manage customer segments effectively and may avoid the financial risks associated with attracting too many purchasers to the loyalty programme or giving them excessively costly rewards compared with their value. For example, a sales increase may be considered a success directly attributable to a loyalty scheme, but substantial sales gains may indicate the programme is giving away too much value to customers, to the firm's eventual financial detriment. Loyalty schemes appear to be fully profitable only when applied to a small number of customers (Benavent *et al.*, 2000), and existing grocery loyalty programmes lack sufficiently precise customer segmentation and targeting methods. In particular, multiple participant loyalty schemes, in which members can accumulate points by buying from various participating stores across retail categories, might be a potential trap because they prevent the programme from achieving repeat purchase loyalty from its customer base, as well as profitability. Multiple participation programmes signal to purchasers that points acquisition is easy and inevitable and therefore that they do not need to change their repeat purchase behaviour. If previously light or non-buyers see the benefits of and join the scheme, they may cancel out the loyalty benefits earned through existing heavy customers.

A differentiated reward system therefore should attract those consumers who are heavier buyers and simultaneously discourage lighter and opportunistic buyers, who may be costly in terms of management and possibly negatively influence expenditures by heavier customers who are turned off by crowding effects. Kumar and Shah (2004) propose, for example, a simple two-tiered reward system, in which the first level manages customer loyalty by treating all shoppers equally and rewarding them in proportion to their total expenses to encourage more spending. At a second level, by carefully selecting appropriate customers, firms build loyalty for their most valuable clients through more qualitative rewards (e.g. personalised relationships, privileged services).

Limitations and further research

Studies in the field of loyalty programmes remain rare and incomplete (Grewal *et al.*, 2004); most are based on norms and not empirically validated. Thus, many questions remain that suggest extensions to our work.

Because relationship proneness and product category involvement is generally low in the supermarket industry, we recommend a certain level of caution with regard to the external validity of our findings. Loyalty card systems might be more profitable in industries characterised by high recruitment costs, such as the mobile phone sector. More replications in other sectors could enhance the generalisability of our findings from the retail sector to other domains.

Furthermore, we focus on store-level variables, but loyalty programmes also could affect total category expenditures. Kopalle and Neslin (2003) find that the elasticity of category demand can drive the success of loyalty programmes, and this topic is definitely worth further empirical study. An interesting approach might expand individual modelling to shopping basket content, because loyalty programmes likely work better for certain products (e.g. baby products; Drèze *et al.*, 1994).

Our study also fails to integrate financial data, though the success of a loyalty programme should be measured on the basis of its financial contribution (Kopalle and Neslin, 2003). A loyalty scheme incorporates many costs, including rewarding and maintenance costs (e.g. operating data warehouses, administering rewards, addressing the logistics of providing rewards in the stores). These costs must be considered to evaluate not only the effectiveness but also the profitability of loyalty programmes.

More research also should pertain to individualised reward systems, because certain segments of consumers are more likely to be influenced by loyalty schemes than are others. Furthermore, the loyalty programme designs studied herein are fairly basic and similar, though companies could gain effectiveness through differentiating their programme designs. A more unique loyalty programme might cause customers to favour it, to the extent that it could keep them from joining competitive schemes. Experimental research indicates that the effectiveness of loyalty programmes depends on the programme's design (Kivetz and Simonson, 2002; Roehm *et al.*, 2002; Yi and Jeon, 2003; Keh and Lee, 2006; Meyer-Waarden and Benavent, 2006b), specifically, the trade-off it entails between immediate monetary rewards and delayed rewards (Meyer-Waarden, 2006). Therefore, further research might investigate how to refine loyalty incentives with progressive saving features or customer tiers (e.g. silver, gold and diamond members), as frequent flyer programmes often use. More research also should address the effects of social benefits (e.g. special shopping nights, newsletters) on affective commitment and customer loyalty. On this issue, no evidence is available from field data; additional research could increase our theoretical and empirical knowledge about the way rewards influence customers' perceptions of the value of loyalty schemes, because rewards determine their programme adoption and use.

Finally, our behavioural loyalty indicators may reflect spurious loyalty, so integrating attitudinal variables would be a promising area of research that could provide empirical evidence about the link between loyalty behaviour and attitudes and thereby separate real and spurious loyalty and explain behaviour (Dick and Basu, 1994). It would be particularly interesting to gauge relationship quality by considering concepts such as trust and commitment, a fascinating area rarely addressed in the supermarket distribution sector. Studies analysing attachment in a routine purchasing

context are also still rare (Macintosh and Lockshin, 1997). In the same vein, an analysis of the impact of loyalty programmes on purchasers' sensitivity to competitors' offers (i.e. differentiation loyalty; Sharp and Sharp, 1997) would be worthwhile.

Notes

1. Customer share of category purchase is defined as the ratio of a customer's purchases of a particular category of products or services from supplier X to the customer's total purchases of that category of products or services from all suppliers.
2. However, both studies should be interpreted with caution because the exit barriers in the industries they study are relatively high.
3. A comparison of the BehaviorScan sample with data pertaining to the actual French population, according to the national statistics organisation INSEE (1999), shows only minor differences (see Appendix, Table A1).
4. Exhaustive recording of the purchasing behaviour by the panellist households is achieved through scanning technology (barcode cards). All seven stores and their checkouts are equipped with BehaviorScan IT systems.
5. This context contrasts with markets with strong brands or in which customers are more influenced by their emotions or affect (i.e. perfume, clothes, cars).

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Further reading

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Appendix

Age (years)	< 20	21-39	40-59	> 60
Sample	0%	28%	40%	32%
INSEE	0.4%	30%	36%	34%
Household size	1	2	3	> 3 persons
Sample	23%	34%	16%	27%
INSEE	25%	31%	16%	28%
Income	Modest	Mean inf.	Mean sup.	Well-off
Sample	29%	21%	38%	12%
INSEE	30%	20%	40%	10%
Activity	Active	Inactive		
Sample	69%	31%		
INSEE	67%	33%		

Table AI.
Comparison of
BehaviorScan sample
with French national
statistics, INSEE data

Table AII.
S4 purchase behaviour
for loyalty card members
and non-members

Store 4	Loyalty program	Year 1		Year 2		Year 3	
		Yes	No	Yes	No	Yes	No
Average store basket	Zone 1 (€)	80	68	84	70	83	71
	Zone 2 (€)	83	69	89	72	91	75
	Zone 3 (€)	74	60	76	66	79	69
Total store basket	Zone 1 (€)	2,132	1,118	2,366	1,389	2,239	1,392
	Zone 2 (€)	1,349	406	1,781	668	1,794	666
	Zone 3 (€)	751	307	1,047	578	1,026	558
Share of category purchase	Zone 1 (%)	61	47	64	48	63	49
	Zone 2 (%)	42	22	44	22	43	22
	Zone 3 (%)	27	18	28	18	28	29
Purchase frequency	Zone 1	27	15	27	17	26	16
	Zone 2	16	6	17	6	16	5
	Zone 3	10	5	10	5	9	4
Inter-purchase time	Zone 1	12	21	11	19	12	19
	Zone 2	19	55	19	55	20	60
	Zone 3	31	61	31	62	33	72
Number of visited stores	Zone 1	2.5	2.4	2.0	1.9	2.2	2.1
	Zone 2	2.5	2.4	2.1	2.0	2.5	2.3
	Zone 3	2.6	2.5	2.1	2.1	2.4	2.4
Switching	Zone 1 (%)	48	59	45	59	46	58
	Zone 2 (%)	68	86	68	85	66	85
	Zone 3 (%)	80	88	80	88	80	88

S4	Time			Time × Zone			Time × Card			Time × Card × Zone			Zone			Card			Zone × Card		
	F	df	p	F	df	p	F	df	p	F	df	p	F	df	p	F	df	p	F	df	p
Average store basket	F	4.1	*	0.1	ns		0.5	*		0.1	ns		12.7	**		55	**		6	*	
Total store basket	F	5	**	1	ns		0.4	*		0.7	ns		91	**		128	**		5	*	
Share of category purchases	F	2.9	**	1.5	ns		0.6	*		0.9	ns		119	**		67	**		4	*	
Purchase frequency	F	15	**	0.8	ns		1.7	*		0.5	ns		262	**		230	**		7.7	*	
Inter-purchase time	F	108	**	11	*		6	*		0.7	ns		106	**		101	**		2	*	
Number of visited stores	F	416	**	7	**		1.3	*		1.0	ns		9	**		11	ns		0.6	ns	
Switching	F	0.9	*	1	ns		1	*		0.7	ns		171	**		61	**		2	*	
Notes: * $p < 0.05$; ns: non-significant; ** $p < 0.01$																					

Table AIII.
S4 intra- and inter-group
variances

Table AIV.
S4 switching
probabilities (zone 1)

	Parameter estimate (SE)
Loyalty card S4	− 0.49 (0.04) **
Intercept	− 1.45 (0.03) **
− 2 log likelihood	12321 with 1 df ($p < 0.0001$)
Good model classifications	85%
Switching probability member	13%
Switching probability non-member	19%
Notes: ** $p < 0.01$; * $p < 0.05$; ns: non-significant	

About the author

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