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ORIGINAL EMPIRICAL RESEARCH

The effects of loyalty program introduction and design on short- and long-term sales and gross profits

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Abstract

Loyalty programs (LPs) are marketing investments designed to foster behavioral loyalty among a firm's best customers and, ultimately, increase firm performance. Surprisingly, the effectiveness of introducing LPs on firm performance in the short and long term has not been thoroughly evaluated. This research examines the extent to which introducing an LP can increase both firm sales and gross profits. Leveraging data from 322 publicly-traded firms that introduced an LP between 2000 and 2015, the authors demonstrate that introducing an LP can increase sales and gross profits in the short term (within the first year), and these positive effects are sustained long term (for at least three years). However, the effects on gross profits do not become significant until the second quarter after LP introduction, and their overall impact on performance lags substantially behind sales. Complementing these primary findings, the results reveal that offering an LP with tiers or earning mechanisms can provide firms with significant increases in sales and gross profits. Taken together, this research demonstrates that introducing strategically designed LPs can dramatically increase firm performance in both the short and long term.

Keywords Loyalty programs · Reward programs · Relationship marketing · Firm profitability · Firm sales

In 2017, there were 3.8 billion loyalty program (LP) memberships in the United States, but only 46% of these members were actively participating in these programs (Colloquy 2017). These simple statistics underscore the challenge that marketing executives face when choosing to invest in an LP initiative. Specifically, the ubiquitous nature of LPs makes marketing executives concerned that their firm is at a strategic disadvantage without an LP, but LPs carry substantial direct investment costs, potential increases in cost of goods sold, and often higher liability expenses on a firm's balance sheets. As a result, managers must carefully consider the large costs of LPs before committing to a program (Dowling and Uncles 1997). Compounding these issues is the fact that most LP costs are variable, so as the programs grow, expenses continue to increase. For LPs to be worthwhile in the long term, firms must see steady and significant increases in overall performance from these initiatives to recoup both the initial and ongoing investment. Unfortunately, academic research has provided only limited analysis of the effects of LP introduction on firm performance.

In the absence of solid empirical evidence, some scholars have gone as far as to call LPs "shams," suggesting that firms would be better off without these programs (Shugan 2005). In an effort to investigate these conceptual and popular press claims, marketing researchers have undertaken a series of projects (see Table 1) that seek to identify how consumer behaviors and spending change when participating in LPs (e.g., Liu 2007; Kopalle et al. 2012). The results of these studies have produced mixed findings and suggest that firms can expect revenue lifts among LP participants ranging from 0% to 100% across customer segments in one study (Liu 2007) and 29% to 34% in another (Kopalle et al. 2012). Despite

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Table 1 A Review of empirical loyalty program literature in marketing

Article	Number of Firms with an LP	Number of Industries	Focal Dependent Variable(s)	Duration for which the LP Affected the DVs	Loyalty Program Characteristics	Considers LP Launch?
Current study	322	35	Total Sales (Members and Non-Members)	Short-Term (First 4 Quarters)	Tiers	Yes
			Total Profits (Members and Non-Members)	Long-Term (First 3 years)	Earning Mechanisms	
					Annual Fee	
Lewis 2004	1	1	Spending (Sample of Members)	13 months	x	x
Taylor and Neslin 2005	1	1	Spending (Sample of Members)	2 years	x	Yes
Leenheer et al. 2007	20	1	Share of Wallet (Sample of Members and Non-Members)	2 years	x	x
Liu 2007	1	1	Usage (Sample of Members)	2 years	x	Yes
Meyer-Waarden 2007	7	1	Duration and Share of Wallet (Sample of Members and Non-Members)	3 years	x	x
Hartmann and Viard 2008	1	1	Spending (Sample of Members)	1 year	x	x
Lemon and Wangenheim 2009	1	1	Usage (Sample of Members)	3 years	Cross-buying partnerships	x
Liu and Yang 2009	15	1	Total Sales (Members and Non-Members)	Long-term (25 years)	x	Yes
Meyer-Waarden and Benavent 2009	1	1	Spending (Sample of Members)	3 years	x	x
Evanschitzky et al. 2012	1	1	Customer Attitudes and Spending (Sample of Members)	6 months	x	x
Kopalle et al. 2012	1	1	Spending (Sample of Members)	2 years	Tier program	x
Zhang and Breugelmans 2012	1	1	Sales (Sample of Members and Non-Members)	33 weeks	Item-based Loyalty Program vs. Price Discount Program	Yes
Steinhoff and Palmatier 2016	3	3	Attitudinal Loyalty and Sales (Sample of Members and Bystanders)	x	Varying reward elements	x

the large variance in the estimates of spending changes, these consumer-level investigations provide initial evidence that LPs can cause consumers to alter their spending habits and become more frequent buyers. However, these studies traditionally suffer from a few shortcomings that prevent their conclusions from informing managerial decision-making. First, these studies tend to focus on changes in consumer purchase behavior, failing to capture the increasing costs associated with programs; thus, they provide little insight into how profitable programs can be. Second, they tend to focus only on customers who enroll in the program, ignoring total revenue growth relative to the entire customer base. Given that only a subset of customers will enroll in an LP, it is logical that increases in total revenue will lag behind the metrics highlighted by current research, and prior literature does not address the magnitude of this discrepancy. Finally, most studies are limited to single firm investigations that assess single performance periods, so translation of their findings over time and across industries is limited.

In an effort to extend the results of consumer studies, a few investigations have sought to explain the effects of LPs across firms. Specifically, Meyer-Waarden and Benavent (2006) leveraged panel data to demonstrate that less than half of the grocery retailers studied experienced increased revenue because of LP membership. These results provide mixed evidence as some retailers did experience the gains suggested in consumer studies, but more than half of the sample experienced no bump in revenue from LPs. Furthermore, this research does not address the critical issue of firm profitability. Thus, the variance in revenue gains could be linked to firm factors or program design decisions. To extend these findings, Liu and Yang (2009) assessed the effectiveness of LPs in the airline industry. They demonstrated that LPs can provide significant gains for firms with high market shares and that market saturation does not negatively moderate the effects of an LP on firm revenue. Taken together, these results suggest that LPs can sometimes benefit a firm via increased revenue, but these effects are contingent on firm and implementation factors, and the question of LP profitability remains unanswered. As a result, decision makers remain uncertain about the lift they should expect in sales and gross profits, how long these gains can be expected to hold, and what strategic design decisions can be made to increase these returns.

We address these gaps in the literature by leveraging a comprehensive database of 322 firms that introduced an LP and 1494 control firms to assess the effects of introducing an LP on both short-term (i.e., up to 12 months following launch) and long-term (i.e., beginning at one year following launch) firm performance. Our results support a more balanced view of LPs that suggests that launching an LP can increase sales and gross profits, but the magnitude of these effects is lower than spending peaks suggested by consumer-level investigations that focus exclusively on LP members. Specifically, firms that

introduced an LP in our sample experienced an average increase of 7% in total sales and 6% in gross profits in the first year following the introduction compared to a matched set of control firms. Three years after the introduction of the LP, firms experienced an 11% increase in total sales and 6% increase in gross profits relative to the same set of control firms. Moreover, consistent with research on social exchange theory and prior LP research, sales and gross profits experience additional lifts when programs feature tiers or earning mechanisms. These results provide robust and generalizable evidence that introducing a loyalty program can increase firm sales and gross profits.

Conceptual background and hypotheses

LPs are marketing strategies with the goal of mutually benefitting firms and customers through increased relational capabilities. Specifically, customers benefit by gaining access to supplemental benefits as a reward for purchasing from a firm, and firms can experience increased profitability due to increased loyalty (Kumar and Petersen 2005). To better understand the process by which an LP introduction can create these positive outcomes for a firm, we must consider two complementary factors that influence firm performance. First, LP introductions can result in a bolstering of firm capabilities and can signal internally to increase the emphasis on customer relationships. These changes in customer capabilities could then create relational and differential advantages over competitors and, ultimately, positive shifts in firm performance. In parallel, the initial acceleration and subsequent, sustained spending increases among enrolled customers could increase firm sales and gross profits. The aggregated impact of these customer changes could result in a net increase in sales and profitability related to the LP introduction. In the following subsections, we explore the conceptual underpinning for these complementary factors that shape the positive relationship between LP introduction and firm performance.

Improved customer capabilities

The Source-Position-Performance (SPP) framework of competitive advantage (Day and Wensley 1988) suggests that superior skills and resources can propel firms into a positional advantage in terms of differentiation (e.g., providing superior customer value), cost leadership (Porter 1980), and organizational capabilities (Day and Wensley 1988). The extent to which a firm can gain positional advantages over their competitors in these areas can directly impact the firm's performance (i.e., sales growth, profitability, and customer retention; Day and Van den Bulte 2002). Within this broad framework, the development of customer relationship management (CRM) capabilities—such as the capabilities offered through the development and introduction of an LP (Meyer-Waarden 2007)—can emerge as a major source of relational advantage (Day and Van den Bulte 2002; Reimann et al. 2010).

This relational advantage develops as a result of increased customer-relating capabilities, which consists of three components: (1) orientation, (2) information, and (3) configuration (Day and Van den Bulte 2002). The orientation component captures a firm's values, behaviors, and mindset surrounding customer relationships. The decision to invest in and launch an LP sends a strong signal—both internally and externally—that customer retention is a key priority and can serve as strong evidence for passing the "litmus test" of a relational orientation (Day and Van den Bulte 2002). Indeed, research has shown that an orientation geared toward customer relationships at the firm level results in increased customer relationship performance (Jayachandran et al. 2005).

The information component accounts for the extent to which an organization has the ability to capture customer information and leverage it to improve relationships. The launch of the simplest LP requires a baseline informational capability, and more advanced programs require a substantial investment in information capabilities. Hogan et al. (2002) claim that acquiring, managing, and modeling customer information can be a source of sustained advantage. In other words, the ability of firms to efficiently process relational information is directly associated with an increase in performance (Jayachandran et al. 2005). Thus, an LP introduction can also contribute to a customer relational capability through improving information.

Finally, the configuration component deals with the supporting organizational structure, incentives, resource commitments, and processes that enable personalized solutions for customers. Given the costs associated with launching an LP, resource commitments are unavoidable. Additionally, intentional efforts spent on effective program design can yield information that facilitates a more targeted marketing approach for CRM. Thus, LP introduction can also contribute to the configuration component of customer relational capabilities. In summation, LP introductions can greatly improve customer relational capabilities, which create a relational advantage for the firm in the marketplace, and ultimately result in an increase in firm performance.

In addition to forming relational advantages, expenditures on a customer-facing investment like LPs can also create a differential advantage for firms (Reimann et al. 2010). Specifically, Reimann et al. (2010) demonstrated that investment in customer relationship systems results in an improved understanding of customer needs and behavior. This allows firms to differentiate their offerings to customers, in particular, members vs. non-members of an LP, thus providing loyal customers with greater value. An important characteristic of this differential advantage is that it increases in strength as more information is gathered and integrated into customer strategies. Thus, the effects of this advantage are not fully

realized until substantial customer information has been collected, distributed, and leveraged in the development of marketing strategies. Reinartz et al. (2004) empirically demonstrated the delay in these CRM benefits: CRM implementation had no significant effect ($p > 0.05$) on objective performance for customers in the initiation stages, but the effect became significant in the maintenance and termination stages. Extending these results to an LP investment, it is possible that effects on firm performance due to differential advantages could lag behind other mechanisms due to the need to accumulate adequate information to create differential offerings for customers.

Changes in member spending

In addition to the macro effects associated with the development of firm capabilities, the introduction of an LP can directly and immediately impact changes in spending among customers who enroll in the program. Specifically, empirical research (see Table 1) has consistently shown that LPs drive changes in consumer behavior, even when accounting for endogeneity issues (Leenheer et al. 2007). A number of studies have attempted to model the impact of program enrollment, participation, and reward redemption on consumer spending, and each of these actions has been associated with boosts in customer spending. For example, sales increases have been attributed to an initial points pressure effect where consumers accelerate their purchases initially to achieve a designated reward or tier (Kivetz et al. 2006; Kopalle et al. 2012; Taylor and Neslin 2005) and then customers become conditioned to the program benefits and spend more because of a rewarded behavior effect (Drèze and Nunes 2011). Increases in sales from LPs have also been attributed to the elevation of status consumers receive. Consumers respond more favorably to LPs if they gain a perceived relative advantage (i.e., status) over other consumers (Kivetz and Simonson 2003) and consumers find LPs designed with more levels preferable to those with fewer levels (Drèze and Nunes 2009). Finally, it has been suggested that increases in sales can be attributed to the role of LPs in forming habits (Henderson et al. 2011); habit strength can independently predict customer repurchase intentions (Breivik and Thorbjørnsen 2008). Taken together, the introduction of an LP can fundamentally increase spending among customers who enroll in the program, and these effects can be experienced as soon as enrollments begin, impacting sales immediately.

Effects on firm performance

We contend that increases in member spending and the benefits experienced through improved customer relational capabilities are enough to drive increases in firm sales and gross profits in both the short and long term. More specifically, we believe that initial increases in spending due to a points pressure effect (Kivetz et al. 2006; Kopalle et al. 2012; Taylor and Neslin 2005) coupled with boosts in spending following initial redemptions or the achievement of status during the first year of launch (Drèze and Nunes 2011; Drèze and Nunes 2009; Kopalle et al. 2012) can increase firm profitability in the short term. In the longer term, we expect the lifts related to increased member spending to be sustained and supplemented by the benefits of increased relational and differential advantages that are developed as a result of increased customer relational capabilities connected to the development, launch, and management of the LP. Therefore, we propose that:

H1: A firm's introduction of a loyalty program has a positive impact on firm sales in both the (a) short and (b) long term.

H2: A firm's introduction of a loyalty program has a positive impact on firm gross profits in both the (a) short and (b) long term.

Effects of program design

Introducing LPs should have a positive long-term effect on firm performance, as stated in our first hypotheses (H1b and H2b), but these effects are likely not constant across types of LPs. Firms constantly strive to design programs to create differential lifts in LP performance, including adding membership fees, tiered benefits, and allowing customers to accrue and bank points for redemption through earning mechanisms. In the following section, we introduce the conceptual foundation for the benefits associated with each of these program design features.

Timing of design effects In line with both H1a and H2a, we expect that merely introducing an LP will significantly improve sales and gross profits in the short term, but we expect that the differential effects associated with LP design decisions will only become significant over the long term. In the short term, the nuances of LP design characteristics may not have had adequate time to produce a noticeable, differential impact on firm performance. The primary reason for the delay in the differential effects associated with design features (e.g., tier benefits and earning mechanisms) can be explained by the need for consumers to experience and learn about these benefits before their impact on firm performance can materialize. Once consumers have had enough time to experience and adjust their spending to ensure they maintain these differential benefits, firms will experience a supplemental change in consumer spending, which can spillover to affect firm performance (Drèze and Nunes 2011). Thus, we expect the differential effects of tiers and earning mechanisms to emerge only

in the long term. Finally, with respect to membership fees, we expect these effects to take additional time to show differential benefits simply due to the need for a sufficiently large number of members to enroll in the program. Once an LP has existed long enough to ensure large-scale enrollments, then the differential changes in sales and gross profits should stabilize in the long term as memberships are renewed annually. In the following subsections we provide more explicit coverage on the rationale for how each of these program design decisions will contribute to increases in sales and gross profits in the long term.

Benefits of tiered programs Status has long been hailed as a primary benefit of LPs because socially relevant stimuli can often motivate behavior better than economic stimuli alone (Bateson et al. 2006). By creating tiers, firms can induce differentially higher sales compared to programs without tiers via several mechanisms. First, tiers help create incremental demand, spurring purchases that would not otherwise be made (Meyer-Waarden 2007; Kopalle et al. 2012). In particular, customers who are on the cusp of attaining the next status level—or in danger of slipping to a lower one—will often spend more to secure the higher status (Nunes and Drèze 2006) and avoid losses from losing their status benefits if they reduce spending in the future (Henderson et al. 2011). In addition to spurring new demand as customers strive toward a richer set of targets, tiered LPs can provide customers with differential benefits that have both economic and social value (Henderson et al. 2011), thus increasing a firm's relational advantage, which results in better performance. When implementing the tiered system, firms will likely experience some increases in cost of goods sold to their tiered members, but we expect these to be outweighed by the higher spending of these frequent consumers. Therefore, we propose that:

H3: A tiered loyalty program experiences greater increases in long-term (a) firm sales and (b) gross profits than a program that does not provide tiers.

Benefits of earning mechanisms In addition to choosing whether to use a tiered LP, marketers must decide whether to offer earning mechanisms. Earning mechanisms typically give members allowances based on their purchases. In particular, consumers accumulate points based on purchases and then these points are redeemable for a broad selection of merchandise and experiences (Liu 2007). Allowing consumers to accumulate points can result in higher sales due to several mechanisms: points pressure, switching costs, and redemption effects.

When consumers need to earn a certain number of points to receive an award, purchase frequency increases so they can hit targets in either the short-run (Kivetz et al. 2006; Lal and Bell 2003; Taylor and Neslin 2005) or long-run (Lewis 2004; Smith and Sparks 2009). As a result, the mechanism to earn points for some achievement or redemption can increase spending. Building on these effects, the accumulation of points can create switching costs that help retain customers and reduce the likelihood of losing revenue through customer churn. Specifically, accumulating points can create economic switching costs for customers; as these points accrue, it becomes less rational to switch to other providers and lose the points earned (Dick and Basu 1994; Mimouni-Chaabane and Volle 2010). Finally, as customers redeem their earned points, there is often an increase in purchase levels after redemption (Taylor and Neslin 2005; Drèze and Nunes 2011). While the redemption of earned rewards will negatively impact gross profits, we anticipate that the substantial revenue required to earn these rewards will compensate for these cost increases. Therefore, we propose that:

H4: A program with earning mechanisms experiences greater increases in long-term (a) firm sales and (b) gross profits than a program that does not offer earning mechanisms.

Benefits of membership fees Finally, a less frequent design feature that firms can employ is the stipulation of a membership fee for joining their programs. For example, Qantas airlines requires a one-time "join fee" (AUD$399) and an annual membership fee (AUD$540) to participate in their Qantas Club rewards program. Membership fees directly contribute to firm revenue, but they can also have longer-term psychological impacts on customer spending. Prior research has demonstrated that individuals who pay an upfront fee engage in more frequent consumption than customers who do not pay a membership fee (Arkes and Blumer 1985) and by requiring customers to pay this fee, customers are less likely to switch to rationally superior alternatives via the sunk cost effect (Thaler 1980). Given that little variable cost is associated with membership fees, we would expect these additions to the program to represent additional revenue and gross profits. Therefore, we propose that:

H5: A program with a membership fee experiences greater increases in long-term (a) firm sales and (b) gross profits than a program that does not require a membership fee.

Interactions between loyalty program mechanisms While the aforementioned LP design characteristics are expected to be beneficial to the firm independently, there is reason to believe that when multiple mechanisms are introduced there could be beneficial or detrimental effects through their interactions. Henderson et al. (2011) suggest that LP research should examine simultaneous effects of multiple mechanisms because

the combined effects of different mechanisms can "undermine or enhance another's existing effect" (p. 271). We address this call by examining the potentially conflicting or synergistic roles of status and earning mechanisms. Specifically, in line with Henderson et al.'s (2011) contention that interactions in dimensions could undermine other benefits, there is likely a substitutive relationship between the presence of tiers and an earning mechanism in LPs, where the presence of both will result in a substitutive effect where the positive main effects are qualified by a significant, negative interaction.

To better understand how the effects of LP characteristics may impact each other, we need to better understand how these design elements provide motivation mechanisms for consumers. Earning mechanisms offer monetary incentives for consumers often referred to as "hard" benefits, while tiers can provide consumers with social benefits or recognition that can classified as "soft" benefits (Drèze and Nunes 2009). These distinctions mirror discussions in social exchange where resources vary with respect to their economic and interpersonal characteristics. In social exchanges, it is argued that more exclusive, interpersonal resources like status (i.e., tiers in an LP context) are often rewarded with other particular resources like love (i.e., loyalty) and once this type of relational exchange is developed, economic resources become a secondary consideration (Foa 1971). As a result, the benefits of offering status could signal a more communal relationship between consumers and firms, thus reducing the effects of more transactional resources like earning mechanisms.

Extending these conceptual foundations, empirical research on human motivation lends additional support to the substitutive effect of social versus monetary motivation mechanisms. At a broad level, research has demonstrated that extrinsic rewards (e.g., earning mechanisms) can crowd out the effects of both social preferences (Bowles and Hwang 2008) and intrinsic motivation (Cerasoli et al. 2014). More specific to the context of loyalty programs, it is possible that the utility gained from monetary rewards (e.g., earning mechanisms) could be blocked by the utility provided by social esteem (e.g., status via a tiered program; Lourenço 2015). Ultimately, in instances when competing motivational mechanisms are present, monetary payoffs and social recognition emerge as substitutes with respect to their ability to predict changes in behavior (Lourenço 2015). Based on these tenets of social exchange and motivational mechanisms, we formally hypothesize:

H6: Offering tiers in a program negatively moderates the effects of earning mechanisms to the extent that the positive effect of earning mechanisms on long-term (a) firm sales and (b) gross profits is reduced in the presence of tiers.

Research method

To test the hypotheses, we first provide initial evidence of the effects on performance based on a difference-in-difference analysis. Then, we demonstrate the effect of an LP introduction on short- and long-term performance (sales and gross profits). Finally, we assess the effects of different LP design characteristics on long-term performance. In the following section, we provide more detail of our research method.

Sample development

To develop the sample for this research investigation, we began by identifying sectors that would have a sufficiently large number of "treatment" firms that introduced LPs as well as "control" firms that have yet to offer an LP. We ultimately included five sectors in our sample frame: retail ($N_{LP} = 149$; $N_{Non\text{-}LP} = 706$), entertainment ($N_{LP} = 33$; $N_{Non\text{-}LP} = 146$), hospitality ($N_{LP} = 75$; $N_{Non\text{-}LP} = 291$), telecommunication and information ($N_{LP} = 34$; $N_{Non\text{-}LP} = 247$), and food and beverages ($N_{LP} = 31$; $N_{Non\text{-}LP} = 104$). These sectors had 322 publicly-traded treatment firms that introduced an LP between 2000 and 2015 and 1494 publicly-traded control firms that did not offer an LP during this window.

Consistent with the American Customer Satisfaction Index (ACSI) convention, we classified department stores (Standard Industrial Classification [SIC]: 5311), shoe stores (SIC: 5661), drug stores (SIC: 5912), grocery stores (SIC: 5411), variety stores (SIC: 5331), general merchandise stores (SIC: 5399), specialty retail stores (SIC: 5700, 5940), consumer shipping (SIC: 4513), women's apparel stores (SIC: 5621), Internet shopping (SIC: 5961), computer and computer software stores (SIC: 5734), game shops (SIC: 5945), consumer electronics (SIC: 5731), and family clothing stores (SIC: 5651) as the "retail" sector. The "entertainment" sector includes amusement and theme parks (SIC: 7990), motion picture theaters (SIC: 7830), and cruises (SIC: 4400). Furthermore, we classified airlines (SIC: 4512), hotel (SIC: 7011), and Internet travel (SIC: 4700) as the "hospitality" sector. Next, we categorized wireless phone (SIC: 4812), subscription to TV/ Cable Services (SIC: 4841), and computer software (SIC: 7372) as the "telecommunications and information" sector. Finally, we classified drinks (SIC: 2080) and full-service restaurant and fast food (SIC: 5812) as the "food and beverages" sector.

Measurement

Independent variables We established whether or not firms introduced an LP during our evaluation window by starting with a consistent definition and selection criteria. We adopted the definition originally introduced by the AMA and summarized by Bijmolt and Verhoef (2017, p. 144) that states: "loyalty programs are continuity incentive programs offered

by a retailer to reward customers and encourage repeat business." Extending this logic, we leveraged suggestions by Bijmolt et al. (2011) that a broader range of firms (not just retailers) can offer LPs and that particular criteria distinguish LPs from other marketing investments (Bijmolt et al. 2011, p. 201 and Bijmolt and Verhoef 2017, p. 144). We then adapted their criteria to fit a coding scheme with the following criteria:

1. The initiative was focused on fostering behavioral loyalty among their customers.
2. Customers had to explicitly enroll or become members of the program to experience benefits.
3. The program provided some rewards or additional services to customers who enrolled and these benefits or rewards had to be supplemental to a firm's core offerings.

Using these criteria as a baseline, we obtained a sample of publicly traded firms that are listed on the U.S. stock markets (i.e., NASDAQ, NYSE, and AMEX) from 2000 to 2015. The final sample of 1816 firms within our 35 two-digit SIC code industries were then evaluated for LP activity. Using this sample frame and the preceding criteria, we began with a review of the database established by COLLOQUY.com to establish an initial list of current and former programs in each industry. Then, we conducted searches for press releases and news stories referencing program introductions on Factiva and LexisNexis as well as reviewing content on each firm's websites in our sample. In the review of press releases and news stories, we searched for relevant keywords (e.g., reward program, loyalty program, customer rewards, program membership, loyalty, rewards, new program, loyalty scheme, loyalty benefits) in conjunction with each firm included in our sample frame. Once these documents were located, two coders reviewed them independently and an initiative was classified as an LP introduction only if both coders agreed that its new offering met all the preceding criteria. If classified as an LP introduction, the coders recorded the launch date. This process resulted in the identification of 322 firms that introduced a loyalty program between 2000 and 2015.

Following the classification of an offering as an LP or not, the coders established subclassifications for the design characteristics. Specifically, coders determined if an LP had tiers or not (Tiers = 1 or 0, respectively), whether the program had an earning mechanism or not (Earning Mechanism = 1 or 0, respectively), and whether the program had a membership fee or not (Membership Fee = 1 or 0, respectively). An earning mechanism was considered present if the customers enrolled in the LP earn some form of credit for each additional transaction or dollar spent. The final percentages of these characteristics for the LP-offering firms in our sample are as follows: 44.10% of the LPs had a tiered system, 48.76% had an earning mechanism, and 10.56% had a membership fee. In Table 2, we

Table 2 Examples of loyalty program design characteristics

Company (Program Name)	Tiers		Earning Mechanisms / Benefits	Membership Fee	Other Benefits
	Tier Levels	Tier Benefits (Examples)			
AT&T (Thanks)	N/A	N/A	N/A	N/A	Movie ticket promotions; concert ticket pre-sale access
Morton's Steakhouse (Landry Select Rewards)	Introductory; President's Club	President's Club: $100 Birthday Reward; Free Valet Parking; Priority Seating; Free After Dinner Drinks; Holiday Gift	Earn points for every $1 dollar spent; Every 250 points results in a $25 reward.	$25	$25 Welcome Reward; $25 Birthday Reward; Discounted Hotel and Casino Rates
California Pizza Kitchen (Pizza Dough)	N/A	N/A	For every $100 spent, receive $5 Pizza Dough redeemable for pizza or beverages	N/A	Free small plate for registering; free dessert on birthday
Expedia (Expedia Rewards)	Introductory; VIP	VIPs unlock additional bonus points for redemption on hotel stays	2 points per $1 spent during booking hotels, activities, and packages; 1 point for every $5 spent on flights	N/A	N/A
Overstock (Club O Gold)	N/A	N/A	5% on every purchase, which are added to the account within two days of purchase shipment	$19.95 per year	Rewards back for writing reviews; free shipping; free, no-hassle returns; 5% back at select restaurants

Some programs contain extra benefits at each tier; however, we selectively report these benefits for the sake of brevity

provide examples of the firms in the sample that offered varying types of programs. It is important to note that this is not a representative sample of the typical programs in the sample, but a convenience sample of firms that represented varied combinations of design characteristics.

Dependent variables Our hypotheses consider two different dependent variables: firm sales and gross profits, which are both assessed in the short and long term. To test effects related to short-term performance, we captured data at the quarterly level and assessed the effects of LP introduction on the first four quarters following launch. For long-term performance, we assessed the effects annually for the first three years. These time ranges were established based on prior operationalizations that suggest long-term effects represent "the cumulative effects on consumer brand choice, lasting over several years" (Mela et al. 1997, p. 249) and that a reasonable window to observe short-term effects for longer-horizon marketing investments is the year following the change (Mitra and Golder 2006). Thus, we combined these conceptualizations and define the short term as capturing the first four quarters and the long term as including each of the first three years post-introduction.

Data for firm sales was obtained both quarterly and annually from COMPUSTAT and, consistent with prior research, we used natural log of sales as our dependent variable. Given that the primary goal of LP introductions is to spur increases in customer spending (Bijmolt et al. 2011), we selected sales as our primary dependent variable rather than more indirect assessments of LP performance like Tobin's Q that places emphasis on assets rather than sales.

Profitability of marketing investments is often assessed as either OIBDP or gross profit (Feng et al. 2017). We adopted the natural log of gross profits as our primary measure of profitability and calculated it by subtracting cost of goods sold (COGS) from sales (Feng et al. 2017). Data for both COGS and sales were obtained at the quarterly and annual levels from COMPUSTAT.

Control variables In addition to the dummies for LP introduction and the LP characteristics, we included leverage, ROA, liquidity, and dividend yield to control for firm characteristics (Luo and Bhattacharya 2009; Tuli and Bharadwaj 2009; Kashmiri and Mahajan 2010), log of total assets as a proxy for firm size, and designed the sector dummies to control for unobservables at the sector level. These data were obtained from COMPUSTAT and CRSP. A summary of the variables and their operationalization is provided in Table 3.

Model-free evidence

To provide initial evidence of the effects of LP introduction on firm performance, we first conducted a difference-in-difference (DID) analysis. DID provides an assessment of the changes in the log of sales and log of gross profits for the treatment set of firms (i.e., firms that introduced an LP) and a set of control firms from the same SIC code that did not introduce an LP. We conducted this analysis by first establishing a difference in performance for the year prior to launch of the LP and then assessed the relative differences in performance for one, two, and three years following the launch of the LP by the treatment firms.

Effects of loyalty program introduction on firm performance For the formal analyses, our research examines the effect of LP introduction on short- and long-term performance (sales and gross profits). Given that the introduction of an LP could be affected by other market and firm factors, it may be endogenous. Taking recommendations from Papies et al. (2017) into consideration, we took several measures to reduce endogeneity bias in our models. First, we included a comprehensive set of covariates to reduce omitted variable bias. Specifically, we controlled for leverage ($Leverage_{i,\ t}$), return on assets ($ROA_{i,\ t}$), liquidity ($Liquidity_{i,\ t}$), dividend yield ($Dividend\ \_\ Yield_{i,\ t}$), and firm size ($Firm\ \_\ Size_{i,\ t}$) to account for firm-specific effects and sector dummies to control for sector-specific effects. In addition to this comprehensive set of control variables, we adopted the control function approach (Petrin and Train 2010).

In an effort to identify appropriate instruments for use in the control function approach, we reviewed prior research on the effects of marketing efforts on firm performance, which suggested that the prevalence of a focal marketing effort in a given industry or within a focal geographic area could serve as an appropriate instruments for the effects of marketing efforts on performance. In our context, we calculated two forms of loyalty program prevalence to use as instruments. The first was loyalty program prevalence by other firms in the focal firm's primary two-digit Standard Industrial Classification (SIC) code. This resulted in establishing loyalty program industry prevalence (LP Industry Prevalence) value for each firm. This operationalization is consistent with the approach used by Germann et al. (2015), who calculated CMO prevalence for peer firms as identified by firms with common two-digit SIC classifications. The second was loyalty program geographic prevalence (LP geographic prevalence). LP geographic prevalence was operationalized by calculating the percentage of firms located within a radius of 150 miles and did not belong to the same 2-digit SIC code that offered an LP.

Conceptually, LP industry prevalence can serve as a valid instrument as it has unique features that satisfy both the inclusion and exclusion criteria. With respect to the inclusion criterion, focal firms in a given industry face similar market conditions and target similar types of customers as their competitors. Thus, the prevalence of a particular marketing investment in the industry should increase the likelihood that a focal

Table 3 Variables, measures, and data sources

Variable name	Operational Measure	Source
Focal Variables		
Loyalty Program	An indicator variable that equals one if the firm introduced a loyalty program between 2000 and 2015; else it assumes the value of zero.	Factiva, LexisNexis, Colloquy.com, Company website
Loyalty Program Prevalence	LP Industry Prevalence: Percentage of other firms in the focal firm's primary two-digit SIC code that have introduced an LP LP Geographic Prevalence: Percentage of firms located within a radius of 150 miles and do not belong to focal firm's primary two-digit SIC code that have introduced an LP	COMPUSTAT
log(Firm Sales)	The natural log value of firm's total sales.	COMPUSTAT
log(Gross Profits)	The natural log of [(Firm Sales – COGS) + Minimum(Firm Sales – COGS)]	COMPUSTAT
Control Variables		
Financial Leverage	Operationalized by firm's debt to asset ratio and measures riskiness of its capital structure.	COMPUSTAT
Return on Asset	The ratio of the firm's net income in a given period to the value of its total assets. It is an indicator of firm's profitability relative to its total assets.	COMPUSTAT
Size	The natural log of firm total assets.	COMPUSTAT
Liquidity	The extent to which a firm's asset can be traded in the market without affecting its stock prices.	CRSP
Dividend yield	The ratio of the dollar value of dividends paid by the firm in a given year per share of stock held to the dollar value of one share of stock. It is an indicator of an investment's productivity.	CRSP
Loyalty Program Characteristics		
Tiers	An indicator variable that equals one if a loyalty program had tiers (e.g., silver, gold, diamond, platinum etc.); else it assumes the value of zero.	Factiva, LexisNexis, Colloquy.com, Company website
Earning mechanisms	An indicator variable that equals one if a loyalty program allowed consumers to earn credit for purchases that could be used to earn rewards or benefits in the program; else it assumes the value of zero.	Factiva, LexisNexis, Colloquy.com, Company website
Membership fee	An indicator variable that equals one if a loyalty program required customers enrolled in the loyalty program to pay an annual fee; else it assumes the value of zero.	Factiva, LexisNexis, Colloquy.com, Company website

firm also introduces a similar, competing marketing effort. With respect to the exclusion criterion, it is unlikely that the firms used to calculate the prevalence variable have visibility to adequately assess the customer relational capabilities and culture of other firms in the industry. For example, it would be difficult for firms in an industry to have clear insight into the customer-centric culture of a particular firm or its technological competence with customer relationship management. Moreover, even if they held such insight, it is less likely that they would act on this insight in a way that would cause their decisions to launch a loyalty program to correlate with the focal firm's organizational capabilities or culture. Thus, prevalence of a LP by other firms in a two-digit SIC code (LP industry prevalence) is unlikely to correlate with the error term that contains the omitted variables.

LP geographic prevalence also has features that suggest it could be a strong instrument. Specifically, with respect to the inclusion criterion, regional prevalence of LPs suggests that a local infrastructure featuring consultants, technological partners, and experienced workforce would be available to support the launch of a loyalty program by the focal firm. As a result, it is likely that a higher prevalence of LPs in a region would drive adoption of an LP. With respect to the exclusion criterion, it is unlikely that firms in other industries would have any direct impact on the performance of the focal firm, which operates in a different industry. Given the preceding logic, we leveraged both LP Industry Prevalence and LP Geographic Prevalence as instruments for our analyses. Collectively, these instruments coupled with a comprehensive set of covariates should provide adequate control for endogeneity biases in the models.

In line with the control function approach, we estimated the model in two stages. In the first stage (i.e., Eq. 1 below), we modeled the i^{th} firm's adoption of an LP in period t (*Loyalty Program*$_{i,\ t}$) as the dependent variable, which is a dummy variable for whether a firm introduced an LP or not (*Loyalty Program*$_{i,\ t}$ = 1 or 0, respectively). Then, using a Probit model, we regressed LP industry prevalence, LP geographic prevalence, and the control variables detailed in Table 3 on LP adoption. In our application, the endogenous variable (LP) is a binary variable, so to obtain accurate residuals for the second stage of analysis, we transformed them into generalized

residuals based on guidance provided by Papies et al. (2017) and Wooldridge (2010). To assess the relative strength of both LP prevalence instruments, we examined and reported the pseudo-R^2 for the first stage equation without LP industry prevalence and LP geographic prevalence, the pseudo-R^2 with these variables added to the model, and the corresponding chi-square test to assess the improvement in fit for a model predicting a binary outcome.

In the second stage, we estimated the main models (i.e., Eqs. 2 and 3 below) with log of firm sales and log of gross profits as the focal dependent variables and included $Loyalty\ Program_{i,\ t}$ as an independent variable along with the generalized residuals obtained from the first stage. Additionally, consistent with Eq. 1, we included leverage ($Leverage_{i,\ t}$), return on assets ($ROA_{i,\ t}$), liquidity ($Liquidity_{i,\ t}$), dividend yield ($Dividend\_Yield_{i,\ t}$), and firm size ($Firm\_Size_{i,\ t}$) as firm covariates. Furthermore, we included sector dummies to control for sector level variations. Moreover, in the second stage, we leveraged bootstrapped standard errors to assess the significance of the coefficients (Petrin and Train 2003; Papies et al. 2017) and examined the significance of the coefficient for the generalized residuals variable as evidence of endogeneity (i.e., Hausman test). The equations below reflect the models used for the long-term performance. The same approach was used for the short-term performance, but focused on four quarterly time periods.

First Stage Equation:

$$\begin{aligned} &Loyalty\,Program_{i,t} \\ &= \alpha_0 \\ &+\alpha_1 LP\,Industry\,Prevalence_{i,t-1} + \alpha_2 LP\,Geographic\,Prevalence_{i,t-1} \\ &+\alpha_3 Financial\,Leverage_{i,t-1} + \alpha_4 ROA_{i,t-1} + \alpha_5 Liquidity_{i,t-1} \\ &+ \alpha_6 Dividend\,Yield_{i,t-1} + \alpha_7 Firm\,Size_{i,t-1} + \alpha_8 Hospitality dummy \\ &+ \alpha_9 Entertainment dummy + \alpha_{10} Food Beverage dummy \\ &+ \alpha_{11} Communication dummy + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Second Stage Equations:

$$\begin{aligned} &\ln\left(Sales_{i,t+k,k=1,2,3}\right) \\ &= \beta_0 + \beta_1 Loyalty\,Program_{i,t} + \beta_2 Financial\,Leverage_{i,t} \\ &+ \beta_3 ROA_{i,t} + \beta_4 Liquidity_{i,t} + \beta_5 Dividend\,Yield_{i,t} + \beta_6 Firm Size_{i,t} \\ &+ \beta_7 Hospitality dummy + \beta_8 Entertainment dummy \\ &+ \beta_9 Food Beverage dummy + \beta_{10} Communication dummy \\ &+ \beta_{11} Generalized\,Residuals + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} &\ln\left(Gross Profit_{i,t+k,k=1,2,3}\right) \\ &= \beta_0 + \beta_1 Loyalty\,Program_{i,t} + \beta_2 Financial\,Leverage_{i,t} \\ &+ \beta_3 ROA_{i,t} + \beta_4 Liquidity_{i,t} + \beta_5 Dividend\,Yield_{i,t} + \beta_6 Firm Size_{i,t} \\ &+ \beta_7 Hospitality dummy + \beta_8 Entertainment dummy \\ &+ \beta_9 Food Beverage dummy + \beta_{10} Communication dummy \\ &+ \beta_{11} Generalized\,Residuals + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Table 4 provides summary statistics of the variables used in the analysis for the subset of firms that introduced an LP during our data collection window ($N = 322$).

Effects of loyalty program characteristics on firm performance

To assess the effects of program characteristics, we focused on the 322 firms in our sample that offered an LP. From this baseline, we developed an ordinary least squares regression that controlled for both firm- and sector-level covariates while estimating the effects of the dummies for the design characteristics. Specifically, we included Tiers, Earning Mechanisms, and Membership Fee as the three determining LP characteristics that predict long-term log of sales and log of gross profits. We assessed the long-term effects, because it takes time for customers to become aware of and experience the benefits of LPs (Drèze and Nunes 2011).

Results

For all analyses, we used the complete sample of firms that included 322 firms that introduced an LP and the 1494 control firms that did not introduce an LP in the analysis period.[1] Specifically, for each treatment firm (firm that introduced an LP), we first identified all the other firms in the industry that did not offer an LP during year (t-1) and (t + 3) where "t" was the year of the focal LP launch. Then performance for each treatment firm was compared against the collective performance of the entire set of matched control firms from the industry.

Difference-in-difference analysis

The results of the difference-in-difference analysis revealed that firms that introduced LPs experienced significantly higher, relative performance in both log sales and log gross profits for the first three years following introduction. Specifically, for total sales, the difference-in-difference estimates (DID) were significant and positive for years one (DID = 1.02, $p < .01$), two (DID = 1.04, $p < .01$), and three (DID = 0.78, $p < .01$) following LP introduction. Similarly, the difference-in-difference estimates were also positive and significant for gross profits in years one (DID = 1.15, $p < .01$), two (DID = 0.51, $p < .01$), and three (DID = 0.90, $p < .01$). Complete results are presented in Table 5.

Given the exponential nature of the natural log transformation to both sales and gross profits, we also conducted the difference-in-difference analysis on the absolute (non-transformed) values of sales and gross profits to better understand the raw changes in firm performance. These results revealed the same pattern of significance as that experienced with the transformed data and suggested that, on average, firms experienced a 7% increase in total sales and a 6%

[1] As a robustness check, we also re-estimated the models using a "one to one" matched sample ($N = 644$), and the results were consistent with respect to signs and significance with those using the entire sample of control firms.

Table 4 Summary statistics

Variable	Mean	Std Dev.	1	2	3	4	5	6	7	8	9	10
1 Log (sales)	7.55	1.82	1.00									
2 Log (Gross Profit)	6.40	2.24	0.94 **	1.00								
3 Tiers	0.44	0.50	0.03	0.06	1.00							
4 Earning Mechanisms	0.49	0.50	0.17 *	0.14 *	0.18 **	1.00						
5 Annual Fee	0.11	0.31	−0.01	−0.01	−0.02	−0.15 **	1.00					
6 Financial Leverage	1.88	6.49	−0.02	−0.03	−0.08	−0.13	−0.05	1.00				
7 ROA	0.04	0.68	0.08	0.15 *	0.10	0.04	−0.02	−0.03	1.00			
8 Liquidity	0.03	0.02	−0.49 **	−0.49 **	0.12	−0.12	−0.02	0.00	−0.30 **	1.00		
9 Dividend Yield	0.02	0.11	0.11	0.47 **	0.03	0.01	−0.04	−0.01	−0.03	−0.18 *	1.00	
10 Size	7.48	2.32	0.90 **	0.95 **	0.07	0.12	0.01	0.02	0.15 *	−0.47 **	0.10	1.00

ROA, return on assets; $n = 322$; * and ** indicate $p < 0.05$ and $p < 0.01$, respectively

increase in gross profits relative to their matched control firms in the first year following LP introduction. Thus, for a firm like Expedia that experienced annual sales of $3.45 billion and annual profits of $2.69 billion in the year prior to introducing their reward program, they could expect to experience a relative increase of $241.5 million in total sales and $161.4 million in gross profits in the year following the LP introduction that could be attributed to the program launch. Three years following the LP introduction, firms had experienced an 11% increase in total sales and 6% increase in gross profits relative to control firms compared to the pre-LP Introduction time period. The DID analysis provides initial evidence that introducing an LP can improve both sales and gross profits for at least three years following introduction. Next, we more formally assess these effects.

Impact of loyalty program introduction on log of sales and log of gross profits (H1-H2)

Short-term performance Prior to reviewing the results of the final models, we discuss the outcomes of efforts to control for endogeneity bias. In the first stage of the control function approach (Equation 1), we estimated the equation without including the LP industry prevalence and LP geographic prevalence variables and the pseudo-R^2 was 0.08. Then, we supplemented the equation by including the LP industry prevalence ($\beta = 29.05$, $p < 0.01$) and LP geographic prevalence ($\beta = 33.42$, $p < 0.01$) variables and the pseudo-R^2 improved to 0.11. The corresponding chi-square test ($\Delta\chi^2 = 169.01$, $p < .01$) suggested that including both the LP industry prevalence and LP geographic prevalence variables in the first equation significantly improved model fit. Thus, they do represent empirically strong instruments (Papies et al. 2017). Based on the results of the first-stage estimation, we included the generalized residuals as an additional variable in the primary model assessments. The results of the second-stage equations (see Table 6) for short-term performance confirmed the presence of endogeneity via the Hausman test, which was assessed by the significance of the coefficient for the generalized residuals variable. The coefficient was significant (all $p < 0.01$) for log of sales across all four quarters. Additionally, the coefficient was significant for log of gross profits for all four quarters at the $p < 0.05$ level. Thus, the Hausman test statistics confirm the presence of endogeneity.

For the primary analyses, the results revealed that LP introduction provides an immediate and significant lift in the log of sales (Quarter 1: $\beta = 6.96$, $p < 0.01$) that is sustained for the next three quarters (Quarter 2: $\beta = 7.17$, $p < 0.01$; Quarter 3: $\beta = 6.87$, $p < 0.01$; Quarter 4: $\beta = 6.99$, $p < 0.01$). However, in evaluating the effects of LP introduction on the log of gross profits, a different pattern emerged. Specifically, LP introduction had no effect on log of gross profits for the first quarter (Quarter 1: $\beta = 0.49$, $p > 0.05$), but starting in the second quarter, the effects of LP introduction became significant (Quarter 2: $\beta = 0.30$, $p < 0.05$; Quarter 3: $\beta = 0.36$, $p < 0.05$; Quarter 4: $\beta = 0.36$, $p < 0.05$). Taken together, the results support H1a since the LP introduction immediately increased log of sales, but they only partially support H2a, because the effects on log of gross profits only emerge after the first quarter. Table 6 provides complete results of the effects of LP introduction on short-term firm performance.

Long-term performance The results of the endogeneity controls were consistent for long-term performance as the first-stage results are consistent across both set of analyses. In the second stage, we again included the generalized residuals from the first stage of the control function approach (Equation 1) as an additional variable in the primary model assessments. The results of the second stage equations (see Table 7) for long-term performance confirmed the presence of endogeneity via the Hausman test, which was assessed by the significance of the coefficient for generalized residuals

Table 5 Difference-in-difference: performance of the treatment versus control firms

PANEL A: Difference-in-Difference Results - Effects of LP Introduction on Log Sales							
	Pre-LP Introduction (t - 1)	Post-LP Introduction (t + 1)		Post-LP Introduction (t + 2)		Post-LP Introduction (t + 3)	
	log (Sales)	log (Sales)	Difference-in-Difference	log (Sales)	Difference-in-Difference	log (Sales)	Difference-in-Difference
Treatment Firm	6.79	7.64	1.02**	7.82	1.04**	7.90	0.78**
Control Firms	5.17	5.01		5.15		5.51	
PANEL B: Difference-in-Difference Results - Effects of LP Introduction on Log Gross Profits							
	Pre-LP Introduction (t - 1)	Post-LP Introduction (t + 1)		Post-LP Introduction (t + 2)		Post-LP Introduction (t + 3)	
	log (Gross Profits)	log (Gross Profits)	Difference-in-Difference	log (Gross Profits)	Difference-in-Difference	log (Gross Profits)	Difference-in-Difference
Treatment Firm	7.51	6.61	1.15**	7.14	0.51**	6.84	0.90**
Control Firms	6.70	4.65		5.81		5.12	

* and ** indicate $p < 0.05$ and $p < 0.01$

log (Gross Profits) in the Pre-LP Introduction year exceeds log (Sales) due to the transformation used to calculate log (Gross Profits): ln[(Firm Sales – COGS) + Minimum(Firm Sales – COGS)]

variable. The coefficient was significant (all $ps < 0.05$) for both log of sales and log of gross profits across all three years, confirming the presence of endogeneity.

For the main models, the results revealed that LP introduction significantly affects the log of sales and log of gross profits across all three long-term periods. Specifically, launching an LP increases the log of sales by 2.41 units in the first year ($p < 0.01$), by 2.42 units in the second year ($p < 0.01$), and by 2.35 units in the third year ($p < 0.01$). With respect to gross profits, launching an LP resulted in 2.10, 1.64, and 1.84 unit increases (all $ps < 0.01$) for years 1, 2, and 3, respectively.[2] These results provide strong support for H1b and H2b. Complete results of the effects of LP introduction on long-term performance can be found in Table 7.[3]

Impact of loyalty program characteristics on firm performance (H3-H6)

To better understand the effects of LP design characteristics on firm performance, we extended the analyses to evaluate the effects of offering tiers (H3), offering earning mechanisms (H4), and requiring a membership fee on firm performance (H5) as well as the potential interaction between tiers and earning mechanisms (H6). Specifically, we first estimated a main effects model (see Panel A in Table 8) and then estimated a model with the interaction effect between tiers and earning mechanisms (see Panel B in Table 8). In the following discussion, we focus on results from the model with the interaction effect. Table 8 presents the results of the analysis of LP characteristics' effects on log of sales and log of gross profits.

Estimates indicate that LPs that utilize a tiered system improve both the log of sales (Year 1: $\beta = 0.09$, $p < 0.01$; Year 2: $\beta = 0.07$, $p < 0.01$; Year 3: $\beta = 0.03$, $p < 0.01$) and the log of gross profits (Year 1: $\beta = 0.08$, $p < 0.05$; Year 2: $\beta = 0.08$, $p < 0.05$; Year 3: $\beta = 0.01$, $p < 0.05$), supporting both H3a and H3b. The effects were significant throughout all three time periods, demonstrating an enduring effect of tiers on performance. Moreover, a closer look at the relative strength of the tiers effect demonstrate a slight reduction in the third year despite the effect remaining significant. With respect to the effects of earning mechanisms, a similar pattern emerged, as its inclusion increased both the log of sales (Year 1: $\beta = 0.20$, $p < 0.01$; Year 2: $\beta = 0.13$, $p < 0.01$; Year 3: $\beta = 0.14$, $p < 0.05$) and the log of gross profits (Year 1: $\beta = 0.13$,

[2] We also assessed the effects of LP introduction on a longer time horizon and found that the effects on both the log of sales and log of gross profits remained significant in years 4 and 5 following launch, providing additional evidence of the enduring effects of LP introduction. These results are available from the authors upon request.

[3] As a robustness check, we also estimated the models using OIDBP as an alternative measure of profitability (Feng et al. 2017), and the results were consistent with those reported for gross profits.

Table 6 Impact of loyalty program introduction on short-term performance

	One Quarter After		Two Quarters After		Three Quarters After		Four Quarters After	
	log(Sales)	log(Gross profit)	log(Sales)	log(Gross profit)	log(Sales)	log(Gross profit)	log(Sales)	log(Gross profit)
Intercept	6.69 **	9.64 **	6.72 **	9.64 **	6.76 **	9.63 **	6.76 **	9.64 **
	(.31)	(.04)	(.30)	(.04)	(.36)	(.05)	(.35)	(.05)
Loyalty Program	6.96 **	.49	7.17 **	.30 *	6.87 **	.36 *	6.99 **	.36 *
	(2.00)	(.32)	(2.13)	(.12)	(2.03)	(.16)	(2.10)	(.13)
Firm-level Controls								
Financial Leverage	.08 *	.00	.08 *	.00	.08 *	.00	.07 *	.00
	(.03)	(.00)	(.03)	(.00)	(.03)	(.00)	(.03)	(.00)
Return on Assets	−6.20 *	.30	−5.71 *	.29	−5.60 *	.28	−5.05 *	.39
	(2.51)	(.29)	(2.30)	(.29)	(2.27)	(.25)	(2.07)	(.32)
Liquidity	−25.34 **	−3.11 **	−25.16 **	−3.10 **	−25.07 **	−3.04 **	−24.04 **	−3.09 **
	(5.57)	(.50)	(4.98)	(.57)	(5.40)	(.57)	(5.37)	(.60)
Dividend Yield	−21.13 **	−.64	−22.11 **	−.61	−21.07 **	−.57	−22.37 **	−.63
	(6.65)	(.49)	(7.41)	(.38)	(7.01)	(.32)	(7.01)	(.38)
Firm Size	1.03 *	−.16 **	.95 *	−.16 **	.95 *	−.16 **	.97 *	−.18 **
	(.35)	(.03)	(.30)	(.03)	(.32)	(.04)	(.32)	(.04)
Sector Dummies								
Hospitality	−.19	−.06 *	−.22	−.06 *	−.26	−.07 **	−.26	−.07 *
	(.28)	(.03)	(.22)	(.02)	(.23)	(.02)	(.28)	(.02)
Entertainment	−.90 **	−.11 **	−.97 **	−.11 **	−1.05 **	−.11 **	−1.01 **	−.12 **
	(.25)	(.03)	(.20)	(.02)	(.23)	(.02)	(.26)	(.02)
Food and Beverage	−.34	−.07 **	−.34 *	−.07 **	−.39 *	−.07 **	−.42 *	−.08 **
	(.20)	(.02)	(.15)	(.01)	(.16)	(.02)	(.17)	(.02)
Communication	1.21 **	.08 **	1.28 **	.08 **	1.20 **	.08 **	1.29 **	.09 **
	(.16)	(.02)	(.20)	(.02)	(.19)	(.02)	(.18)	(.02)
Generalized Residuals	−2.67 **	−.08 *	−2.76 **	−.07 *	−2.63 **	−.04 *	−2.66 **	−.05 *
	(.81)	(.03)	(.84)	(.03)	(.95)	(.02)	(1.00)	(.02)
R-squared	0.30	0.19	0.31	0.18	0.30	0.18	0.31	0.19

* and ** indicate $p < 0.05$ and $p < 0.01$; Sector Dummy base condition = Retail

$p < 0.05$; Year 2: $\beta = 0.09$, $p < 0.05$; Year 3: $\beta = 0.42$, $p < 0.01$), supporting both H4a and H4b. For the effect of earning mechanisms the effects were once again consistently significant, but the relative strength of the effects varied more than those found for tiers. Finally, membership fees had a direct impact on sales in all three time periods providing support for H5a (Year 1: $\beta = 0.11$, $p < 0.01$; Year 2: $\beta = 0.62$, $p < 0.05$; Year 3: $\beta = 0.36$, $p < 0.01$), but only impacted gross profits significantly in Year 2 ($\beta = 0.25$, $p < 0.05$). These results provide full support for H5a and partial support for H5b. These mixed results suggest that membership fees might benefit the firm in the form of an initial burst in sales, but it appears that the benefits attached to membership fees might carry costs that impede the ability for membership fees to be a constant driver of gross profits.

Evaluating the interaction effect between tiers and earning mechanisms, the results suggest a substitution effect given the positive main effects and a significant, negative interaction between tiers and earning mechanisms for the log of sales (Year 1: $\beta = -0.36$, $p < 0.01$; Year 2: $\beta = -0.12$, $p < 0.01$; Year 3: $\beta = -0.09$, $p < 0.01$), but no interaction for the log of gross profits (all $p > 0.05$). This implies that tiers and earning mechanisms interact in a substitutive fashion to affect sales when both are present in the program. Over time, the strength of this interaction is reduced suggesting that the interaction between the design characteristics is strongest during program launch and, over time, tiers and earning mechanisms may provide more independent impact on firm sales as the interaction fades. To better understand the nature of the interaction, we plot the effects for the final year of analysis in Fig. 1. These results provide support for H6a but not H6b. The lack of significance of the interaction on gross profits could be viewed as encouraging as it suggests the main effects of tiers and earning mechanisms don't have a substitutive effect on gross profits like they do on sales.

Table 7 Impact of loyalty program introduction on long-term performance

	One Year After		Two Years After		Three Years After	
	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)
Intercept	6.20 **	5.62 **	6.40 **	6.30 **	6.60 **	5.96 **
	(.26)	(.17)	(.30)	(.16)	(.33)	(.26)
Loyalty Program	2.41 **	2.10 **	2.42 **	1.64 **	2.35 **	1.84 **
	(.42)	(.31)	(.38)	(.26)	(.46)	(.41)
Firm-level Controls						
Financial Leverage	.02	.01	.02	−.01	.02	.01
	(.02)	(.02)	(.02)	(.02)	(.03)	(.02)
Return on Assets	1.81 **	1.86 **	1.97 **	.75 *	2.17 **	1.50 **
	(.45)	(.42)	(.49)	(.30)	(.52)	(.47)
Liquidity	−15.02 **	−10.42 **	−15.92 **	−6.15 *	−15.56 **	−8.97 *
	(3.67)	(2.26)	(5.00)	(2.40)	(4.78)	(3.88)
Dividend Yield	11.80	11.22 *	10.64	8.32	7.83	7.14
	(6.14)	(4.71)	(7.88)	(4.56)	(7.53)	(4.51)
Firm Size	.20 **	−.04	.16 *	−.05	.06	−.07
	(.08)	(.05)	(.06)	(.04)	(.12)	(.04)
Sector Dummies						
Hospitality	−.64 **	−.83 **	−.74 **	−.44 **	−.76 **	−.74 **
	(.19)	(.19)	(.18)	(.12)	(.26)	(.16)
Entertainment	−.91 **	−.92 **	−.96 **	−.65 **	−1.17 **	−.94 **
	(.25)	(.16)	(.24)	(.15)	(.30)	(.17)
Food and Beverage	−.71 *	−1.07 **	−.87 *	−.82 **	−.89 *	.17 **
	(.23)	(.28)	(.29)	(.16)	(.39)	(.25)
Communication	.18	.06	.03	.12	−.25	−.19
	(.30)	(.21)	(.27)	(.15)	(.25)	(.20)
Generalized Residuals	−.50 *	−.37 *	−.46 *	−.29 *	−.36 *	−.25 *
	(.21)	(.13)	(.18)	(.12)	(.15)	(.09)
R-squared	0.41	0.40	0.42	0.36	0.41	0.37

* and ** indicate $p < 0.05$ and $p < 0.01$; Sector Dummy base condition = Retail

Discussion

This research provides a rare glimpse into the firm-level returns offered by LPs in both the short and long term. To date, most research has been conducted at the consumer level and has focused on the general processes by which customers change their behavior once they enroll and progress in LPs, but few studies have shown if this narrow focus on moving the needle with enrolled members translates into increases in both sales and gross profits at the firm level. Our results extend initial firm-level investigations (e.g., Liu and Yang 2009) by demonstrating that the introduction of an LP can have direct effects on a firm's sales and gross profits in the short term, and these increases can extend for at least three years following launch. However, the LP effects on gross profits do not become significant until the second quarter, and their overall impact on gross profits lags substantially behind sales. Moreover, programs that feature design elements like tiers and earning mechanisms experience differentially higher returns in sales and gross profits. These results show that program design characteristics can drive additional sales and gross profits and should be managed strategically during the program development process.

Managerial implications

Our findings provide evidence of the financial benefits of introducing an LP and offer insight into how programs could best be designed to spur increases in sales and gross profits. In this section, we discuss how managers could leverage these results.

Justification for loyalty initiatives Executives tasked with loyalty initiatives are often faced with stiff resistance from their peers in finance and accounting concerned with the increased liability LPs bring to a firm's balance sheets. Thus, LP

Table 8 Impact of loyalty program characteristics on firm performance

	Panel A						Panel B					
	Year 1		Year 2		Year 3		Year 1		Year 2		Year 3	
	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)	log(Sales)	log(Gross Profit)
Intercept	.64 **	1.00 **	.42	.56 **	1.04 **	.87 **	8.82 **	1.00 **	9.15 **	.56 **	9.07 **	.86 **
	(.31)	(.24)	(.32)	(.24)	(.37)	(.27)	(.61)	(.24)	(.63)	(.25)	(.64)	(.27)
Tiers	.05 **	.08 *	.06 **	.08 *	.12 **	.01 *	.09 **	.08 *	.07 **	.08 *	.03 **	.01 *
	(.02)	(.04)	(.03)	(.04)	(.06)	(.00)	(.03)	(.04)	(.03)	(.04)	(.02)	(.01)
Earning mechanisms	.17 **	.13 *	.15 **	.09 *	.16 **	.06 *	.20 **	.13 *	.13 **	.09 *	.14 *	.42 **
	(.08)	(.07)	(.07)	(.05)	(.08)	(.03)	(.10)	(.08)	(.07)	(.05)	(.07)	(.16)
Membership fee	.07 **	.18 *	.16 *	.25	.09 **	.38 **	.11 **	.18	.62 *	.25 *	.36 **	.05
	(.03)	(.10)	(.08)	(.15)	(.03)	(.14)	(.05)	(.13)	(.35)	(.14)	(.14)	(.09)
Tiers*Earning mechanisms							−.36 **	−.01	−.12 **	−.05	−.09 **	−.15
							(.13)	(.20)	(.05)	(.30)	(.03)	(.33)
Firm-Level Controls												
Financial Leverage	.00	.00	.00	.00	.00	.00	−.01	.00	−.01	.00	−.02	.00
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.02)	(.01)	(.02)	(.01)	(.02)	(.01)
ROA	.70	.95 **	.87 *	1.03 **	1.06 **	1.09 **	1.17	.96 **	.80	1.04 **	.85	1.13 **
	(.47)	(.41)	(.47)	(.41)	(.54)	(.44)	(1.41)	(.42)	(1.47)	(.42)	(1.48)	(.45)
Liquidity	−1.72	−3.45	−.05	−1.46	−1.34	−1.19	−3.24 **	−3.45	−3.90 **	−1.46	−3.87 **	−1.17
	(2.99)	(2.62)	(3.01)	(2.62)	(3.45)	(2.81)	(1.25)	(2.63)	(1.54)	(2.63)	(1.47)	(2.82)
Dividend Yield	−6.64 *	−3.12	−7.55 *	−5.97 **	−6.75	−5.64 **	−6.84 *	−3.12	−5.41 **	−5.97 **	−3.46 **	−5.55 **
	(4.03)	(2.45)	(3.96)	(2.41)	(4.49)	(2.70)	(3.88)	(2.46)	(2.13)	(2.42)	(1.44)	(2.71)
Firm Size	.82 **	.83 **	.85 **	.89 **	.80 **	.86 **	.10	.83 **	.07	.89 **	.10	.86 **
	(.03)	(.02)	(.03)	(.02)	(.03)	(.02)	(.19)	(.02)	(.20)	(.02)	(.21)	(.02)
Sector Dummies												
Hospitality	−1.26 **	−1.49 **	−1.32 **	−1.41 **	−1.17 **	−1.40 **	−.54	−1.49 **	−.69	−1.41 **	−.37	−1.40 **
	(.14)	(.13)	(.14)	(.13)	(.17)	(.14)	(.52)	(.13)	(.54)	(.13)	(.55)	(.15)
Entertainment	−1.09 **	−.99 **	−1.11 **	−.94 **	−1.05 **	−.94 **	−.62	−.99 **	−.80	−.94 **	−.71	−.93 **
	(.13)	(.12)	(.14)	(.12)	(.16)	(.13)	(.49)	(.13)	(.52)	(.13)	(.51)	(.13)
Food and Beverage	−.44 **	−.91 **	−.51 **	−.96 **	−.57 **	−.98 **	−1.35 **	−.91 **	−1.63 **	−.96 **	−1.67 **	−.98 **
	(.14)	(.12)	(.14)	(.12)	(.17)	(.14)	(.41)	(.12)	(.44)	(.12)	(.46)	(.14)
Communication	−.65 **	−.70 **	−.62 **	−.78 **	−.62 **	−.82 **	−.59	−.70 **	−.52	−.78 **	−.42	−.82 **
	(.13)	(.11)	(.13)	(.11)	(.15)	(.12)	(.42)	(.12)	(.43)	(.11)	(.43)	(.12)
R-squared	0.83	0.95	0.84	0.96	0.81	0.95	.86	.95	.87	.96	.86	.95

* and ** indicate $p < 0.05$ and $p < 0.01$; Sector Dummy base condition = Retail

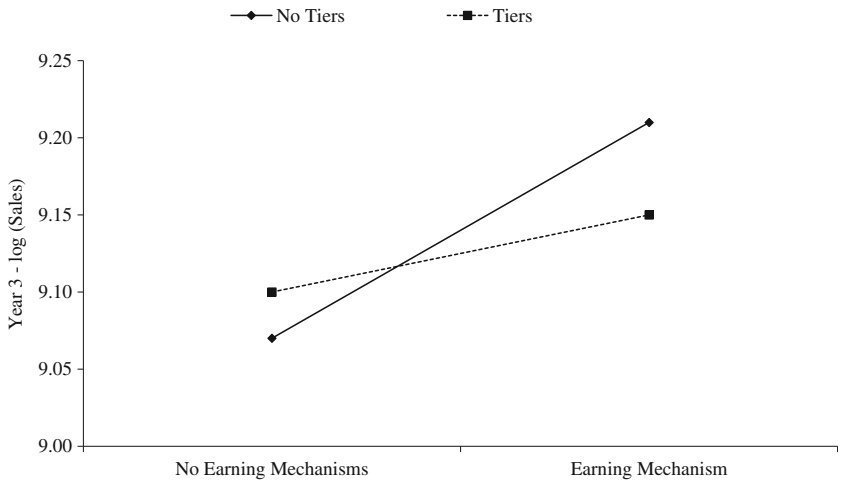

Fig. 1 Interaction between tiers and earning mechanisms

managers need to provide strong, quantifiable justification for the benefits an LP can provide. Our results nicely complement the rich set of research at the consumer level (see Table 1) and the subset of papers that show firm-level returns of LPs. Specifically, the results of the difference-in-difference analysis reveal that firms that introduced an LP in our sample experienced an average increase of 7% in total sales and 6% in gross profits in the first year following its launch comparted to a matched set of control firms. Three years after the introduction of the LP, firms experienced an 11% increase in total sales and 6% increase in gross profits relative to the same set of control firms. Thus, LPs do represent a solid marketing investment that can increase both sales and gross profits.

Need for a long-term focus Our results also demonstrate that the introduction of an LP can provide a lift in sales and gross profits that is sustained for at least five years (including the robustness analyses) following the introduction. These results suggest that LPs can be viewed as longer-time horizon marketing investments that can provide long-term returns to the firm. Despite these long-term benefits, the results also demonstrate that firms should not expect to experience significant increases in gross profits until the second quarter after introduction, despite a first quarter bump in total sales. Thus, firms need to exercise patience when evaluating the impact of the introduction of an LP on the bottom line and should stay the course following an introduction to allow the effects on gross profits to ramp up and stabilize. Looking beyond the initial launch period, our results suggest that an initial LP introduction provides at least five years of sustained sales and gross profits increases, but we do not provide insight into how much longer these effects are sustained beyond this time period. It is possible that a program's benefits could begin to wear out and a firm would need to refresh their program. Future research could examine the impact of a program re-launch on firm performance.

Program design In addition to demonstrating the primary effects of launching an LP, our results provide additional evidence that if firms thoughtfully select characteristics in the design of their LPs, there is an associated increase in sales and gross profits. Specifically, our results indicate that programs that allow for customers to achieve status via a tiered system experience differentially higher sales and gross profits in all three years post LP introduction. These results are consistent with the findings of Drèze and Nunes (2009, 2011), Kopalle et al. (2012), and arguments introduced by Henderson et al. (2011) about the loyalty-inducing effects of offering consumers status. Our results extend prior research by examining longer time periods across multiple firms in 5 sectors and 35 industries.

Earning mechanisms yielded consistently strong effects in our study as well. Thus, programs should expand beyond simply providing "everyday benefits/perks" and also create an opportunity for customers to earn credit toward additional benefits. By designing an LP with an earning mechanism, firms can experience these boosts in sales and gross profits and then strategically manage the programs to capitalize on other consumer biases, such as the endowed progress effect (Nunes and Drèze 2006). Also, our results suggest some substitutive effects between tiers and earning mechanisms on sales, so during the program design decision, executives should be aware that simply adding more benefits might not consistently provide additive lifts in sales. Finally, membership fees proved to be an effective driver of long term sales, but had more fleeting effects on gross profits. These inconsistent effects on gross profits could be due to firms offering more everyday benefits to customers in LPs that require a membership fee. As a result, these recurring perks could erode margins with each transaction to the point that the impact on gross profits are limited. As a result, firms need to be aware that membership fees can be an effective way to increase total sales, but the differential impact on gross profits is much smaller.

Theoretical implications

In addition to the managerial relevance of our research, this work also has theoretical implications relevant to academics and provides new insight into how firms can develop competitive advantages through the introduction of loyalty programs. We discuss these theoretical implications next.

Loyalty programs as a source of competitive advantage Our research is among the first to consider LPs as a tool for competitive advantage using Day and Wensley's (1988) Source-Position-Performance (SPP) framework. Prior work has highlighted that LPs provide managers with CRM capabilities (Meyer-Waarden 2007) and we extend this research by considering LPs as a source of relational advantage for the firm. Moreover, our results demonstrate that these positive effects hold over the longer term, which lends support for arguments that differential advantage of relationship marketing investments may increase as the firm accumulates more information about their customers. Ultimately, the use of the SPP framework to analyze the cost and benefits of LPs shows the importance of integrating firm-level theory alongside long-standing consumer-level frameworks when accounting for the effects LPs have on marketing outcomes.

Reconciling prior literature on LP contributions As noted in the introduction, prior work on LPs have found that revenue lifts from LP introduction range from 0% to 100% (Liu 2007) or 29% to 34% (Kopalle et al. 2012). However, prior work typically focused on customers enrolled in LPs and failed to account for the entire customer base (as noted in Table 1). By accounting for the entirety of the customer base across multiple firms, our difference-in-difference analysis suggests that a firm can experience an 11% increase in sales and 6% increase in gross profits three years following introduction. These results suggest that LPs can indeed increase sales and gross profits for the firm, the extent of the lift at the firm level is notably lower than the relative increases in spending for program members that has been the focus of most prior research.

Interactions between LP design characteristics We also build on prior calls in the literature (e.g., Henderson et al. 2011) to assess the simultaneous effects of differing LP mechanisms. The positive effects of tiers and earning mechanisms on log of sales, but a negative interaction, supports the substitutive nature of these design elements suggested by Henderson et al. (2011). We attribute this to tenants of social exchange, specifically the distinction between interpersonal and economic considerations. We expect that showing the conflicting effects of these two program design elements will spur discussion on the optimal strategy firms can use when designing an LP and researchers focusing on LP design should account for both elements—as well as their interaction—in their work.

Limitations and future research

Like all research, this study is not without limitations. Our research was limited to relatively large, publicly-traded companies, so it is unclear if the effects would translate to smaller firms. The underlying logic of the effects of LP enrollment on customer spending should span categories and firm size, but we are unable to explicitly model these effects using our data. Moreover, our results do not explicitly investigate the mechanism(s) driving the increases in sales and gross profits. We posit that these effects are driven jointly by an improvement in customer relational capabilities and by increased member spending, but we are unable to determine the extent to which each mechanism contributes to the changes in firm performance. Future research should empirically test these complementary mechanisms.

We also do not examine the role of major or minor program revisions in driving increases in sales and gross profits. Additionally, our results provide evidence of the average effects experienced by firms that introduced an LP between 2000 and 2015, so future research should assess stability of these results across other time periods and competitive circumstances. Addressing these limitations would continue to extend our knowledge of the benefits of loyalty programs.

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