



Loyalty programs and dynamic consumer preference in online markets



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ABSTRACT

With the rise of online retail markets, many online retailers are replicating the promotion strategies that offline retailers have used without a clear understanding of whether these strategies will deliver similar results in online markets. In particular, a loyalty program, which provides rewards that can be used for future purchase, is a widely adopted promotion strategy by both offline and online retailers with the intention of increasing customer retention and resultant profits. However, the profit contribution of loyalty programs in offline markets is highly controversial. Our question is whether the result will be similar in online markets. Our game-theoretic model shows that the likelihood of success for loyalty programs is higher in online than in offline markets. We note that consumers' preference for retail stores is more dynamic, and the cost of revisiting a store to redeem loyalty rewards is relatively lower in online markets, because consumers in online markets do not incur physical transportation costs. These characteristics provide the condition where loyalty programs effectively facilitate customer retention, while having fewer risks of rewarding the customers who would have made a purchase regardless of any offered rewards. Our model also suggests that, due to the more dynamic consumer preference in online markets, transaction data collected through loyalty programs provides stronger profit incentives for retailers. Our study helps retailers understand the differences between offline and online markets as well as the impact of the differences on the effectiveness of their loyalty programs.

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1. Introduction

With the rise of online retail markets, many online retailers are replicating promotion strategies traditionally used by offline retailers. A loyalty program is one such promotion strategy, used by many retailers, both off- and online. A loyalty program is a marketing promotion vehicle that provides customers with incentives to make repeat purchases. For example, consider the well-known frequent flier programs offered by many airlines, in which airlines offer a free trip or a free upgrade according to a customer's accumulated flight mileage. Similarly, a number of retailers have programs (e.g., Bloomingdale's Loyallist Program, Nordstrom's Fashion Rewards, Starbucks' My Starbucks Rewards) that offer rewards to frequent buyers such as points redeemable as discounts for future purchases.¹ The purported objective of a loyalty program is to retain existing customers and, ideally, increase profits [12]. Such a program tries to change the customer's choice process from operating in a spot market to operating in a multi-period, contractual relationship market. In addition to the potential increase in customer retention, many retailers are trying to capitalize on the transaction data of

individual customers collected through a loyalty program [24]. With the high rise of interest in data analytics and advances in data-mining technologies, retailers expect increasing potential value in loyalty programs for their customer relationship management (CRM). Target is one retailer that has successfully combined the data from its loyalty program with its data-mining capabilities [22]. The data collected through its loyalty program, REDCard, enable Target to provide customized offers to its highest-value consumers by analyzing their transaction histories at an individual customer level.

The profit contribution of loyalty programs in offline retail markets, however, is still controversial [12,19,22,23,24]. There have been questions regarding the actual value of loyalty programs, and skeptics raise concerns about the possibility of detrimental effects of loyalty programs on the profitability of retailers [22]. A recent McKinsey research report found that profit margins of companies with high spending on loyalty programs are about 10% lower than those of their competitors [22]. Moreover, several empirical studies [11,18,20] suggest that the overall effectiveness of loyalty programs diminishes as markets become saturated. These findings further heighten skepticism regarding the future of loyalty programs.

Despite questionable returns from loyalty programs in offline markets, several online retailers have adopted and replicated these strategies of offline retailers. For example, Overstock.com offers Club O, which provides rewards on the basis of previous purchases that can be used for

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¹ Retailers often provide loyalty programs through store credit cards. In our analysis, we exclude the case of loyalty program through store credit cards, because store credit cards have unique business models that go beyond simple loyalty rewards.

future purchases. Drugstore.com also offers Drugstore.com Dollars™, which allow customers to earn 5% credit toward future purchases.

Although there is high interest in the impact of loyalty programs on retailers' profits, our understanding of what conditions are necessary for a loyalty program to contribute to increasing retailers' profits is still unclear. In particular, Fox et al. [13] call for more research that compares the effectiveness of marketing promotions across channels, including online and offline channels. However, very little research has actually addressed these issues. A study by Zhang and Wedel [30] is one exception in that it provides empirical evidence of higher effectiveness of loyalty programs in online than in offline markets. This study does demand a more thorough theoretical investigation for the underlying mechanism that explains the differences between loyalty programs in online and offline markets.

Our paper aims to explain under what conditions a loyalty program can be successful, and whether such conditions are relevant to explain the difference between offline and online markets. Based on the literature of dynamic consumer preference and horizontal differentiation, we propose a game-theoretic model that examines the impact of three factors on the profit implications of loyalty programs: (1) the dynamics of consumer preference, (2) the sensitivity of consumers to the differentiation between stores, and (3) the value of transaction data collected through loyalty programs. For online markets, a consumer's preference for a particular retail store is more dynamic and changes relatively easily over time compared with offline markets; in offline markets, consumers are bound to a geographical location, which serves as an exogenous switching cost. Also, the sensitivity of consumers to the differentiation between stores is relatively lower in online markets, because the cost of visiting the less preferred store is relatively lower due to the absence of physical transportation costs. These characteristics provide a condition where loyalty programs effectively persuade consumers to revisit the stores to redeem their loyalty rewards, while having fewer risks of rewarding customers who would have purchased regardless of the offered rewards. Our model also suggests that, when consumer preference is stable (i.e., consumers rarely change their preference over time), the benefits from analyzing transaction data gathered through loyalty programs are distributed to the consumers and have no impact on the retailers' profits. On the other hand, with dynamic consumer preference, the benefit of transaction data provides stronger profit incentives for retailers to adopt loyalty programs. Furthermore, we suggest that the existence of online loyalty programs may explain a low level of shopbot usage [28]. Knowing that the potential rewards are not displayed on shopbot results, informed consumers may select a retailer that charges a higher regular price or may not use shopbots at all.

Our results provide many important theoretical and practical implications. Theoretically, this is the first study that explicitly examines the differences of the efficacy of loyalty programs between online and offline markets, suggesting a high potential of loyalty programs in online markets. Our study contributes to the literature by identifying three key factors (the dynamics and sensitivity of consumer preference and the value of the transaction data) that determine the profitability of loyalty programs. The first two factors characterize the differences between online and offline markets, and these factors explain the different impact of loyalty programs between online and offline markets. In addition, our study is the first attempt to consider the value of transaction data gathered through loyalty programs in the analysis of profit implications related to loyalty programs. This study also provides several practical implications, suggesting that retailers should rationalize implementing loyalty programs on the basis of the dynamics of their target consumers' preference, their sensitivity to the differentiation of stores, and the potential value of transaction data gathered from loyalty programs. Our results also suggest that even if retailers have not gained substantial financial benefits from implementing loyalty programs in the offline channel, they should still consider implementing them in the online channel because the result can be significantly different in

a positive way. In addition, our study emphasizes the importance of complementary data-mining capabilities and technologies in order to take full advantage of the benefits from loyalty programs.

The paper is organized as follows. Literature relevant to loyalty programs is reviewed in the next section. In Section 3, the basic settings of our model are explained. In Section 4, we examine the competition between two stores in the market with low dynamics, which reflects characteristics of offline markets. We propose our main model in Section 5, where the competition in the market with dynamic consumer preference is examined and discussed. We analyze the profit gains obtained by implementing loyalty programs as a function of the sensitivity of consumers to differentiation between stores and the value of transaction data from loyalty programs. In Section 6, we discuss the theoretical and practical implications and limitations of our model and suggest directions for future research.

2. Previous literature

Reflecting the popularity in practice, loyalty programs have been examined extensively under various concepts and terminologies in marketing and microeconomics research, such as endogenous² switching costs, frequent-shopper (flier) programs, reward programs, and reloaded promotions. We recommend Dorotic et al. [11] for a thorough review of previous research on loyalty programs. In this section, we focus on the research that examines economic drivers and financial consequences of implementing loyalty programs. There are mainly two perspectives in this stream of research, which views a loyalty program as: (1) a means to reduce future uncertainty, and (2) a means to create switching costs under dynamic consumer preference.

Earlier studies [9,17] that examine the value of loyalty programs focus on the fact that loyalty programs reduce uncertainty for customers regarding future prices. When consumers purchase an initial unit, they are uncertain of the value of a repeat purchase from the same supplier at a later date. Klemperer [17] and Crémer [9] consider a loyalty program as the pre-commitment to a low future price by the seller and model that the customer resolves uncertainty by joining a loyalty program even before the decision to repurchase is made. Specifically, Crémer [9] shows using a two-period model that, when consumers are risk-neutral, the increase in the initial price by a seller in the first period does not diminish the expected utility of consumers, if the seller guarantees a lower future price in the second period. In this case, the seller's sales level in the first period is the same, but there is an increased proportion of repurchases due to the lower second-period price, demonstrating that the loyalty program would have positive impact on a seller's revenue. These earlier studies provide valuable insight on the approach to examining loyalty programs. However, they examine the case when a seller has a monopolistic power, so the implications from these studies provide little insight for retailers facing fierce competition.

To explain the viability of loyalty programs in competitive environments, Bulkley [6] considers the case where the price dispersion exists as equilibrium, and consumers compare a certain number of firms to find the most favorable price in the market. In his model, the uncertainty of future prices again serves as a key factor driving the value of loyalty programs. The model shows that if consumers are risk-neutral, there is an incentive for a firm to offer loyalty programs, because firms can set a higher first-period price.

Another approach to examining loyalty programs is to consider them as explicit switching costs when consumer preference changes dynamically over time. Caminal and Matutes [7] extend the notion that a loyalty program is an endogenous switching cost. They suggest a game-theoretic model, which shows that, if the preference of a

² In the presence of a loyalty program, the rewards provided through the loyalty program serve as the switching costs that are created as the results of endogenous decisions by sellers.

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