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# WILL YOU BE MINED? ETHICAL CONSIDERATIONS OF OPT-IN LOYALTY PROGRAMS AND PRICE DISCRIMINATION

**Gregory E. Smith, Xavier University, smithg2@xavier.edu**
**Michael S. Rimler, Xavier University, rimlerm@xavier.edu**

## ABSTRACT

*The use of loyalty programs in retailing permeates the modern shopping experience. Program members are rewarded with benefits for simply providing purchase information to the retailer. In exchange, retailers hope to use the information in conjunction with data mining to make better business decisions. While many of the uses are common knowledge to consumers, not all are. Unfortunately, some uses have raised ethical concerns among consumers. This paper discusses the interplay of data mining and loyalty programs with the potential ethical implications of price discrimination as a result of the synergy.*

**Keywords:** Data Mining, Ethics, Price Discrimination, Loyalty Programs

## INTRODUCTION

Residing in many wallets and key chains are objects just as valued as currency to numerous retailers: loyalty club cards. Loyalty club cards reveal the market basket of consumers to retailers at a personal level through membership in a loyalty program. Retailers are able to observe what their members are purchasing, when they purchase it, where they purchase it, etc. at point of purchase. By combining this information with data mining applications, retailers gain insights about their customers at a level often reserved for small, niche stores.

While members are aware that shopping data are being collected, some may not be aware of how it is ultimately being used on the retailer side. Many of the uses appear to be fair to the member, but not all are thought to be ethical. One potential unethical use of loyalty information that has received little attention is as a price discriminator.

The following research presents an overview of loyalty programs as a form of price discrimination and how data mining may serve as an enabler. The paper is presented as follows. First, we discuss loyalty programs and the uses of data mining with the practice. Second, some potential issues associated with loyalty programs are addressed. Next, the relationship between price discrimination and loyalty programs is discussed. Last, we discuss the ethical implications of data mining with loyalty programs as it pertains to the uses of consumer information.

## LOYALTY PROGRAM OVERVIEW

The goal of many large retailers is to develop relationships with their customers in a manner similar to small specialty stores where store workers get to know their customers at a personal level and provide customized services. As such, fidelity between parties grows and customers become fiercely loyal. While developing this level of relationship may seem quite the daunting task on a large scale, modern retailers have an ace up their sleeve – loyalty programs. A loyalty program is a marketing effort whose design is to encourage and reward loyal behavior on the part of the customer. While the literature has called into question the need for and advantage of loyalty programs [5,8,9,11], there remain few, if any, sectors of retailing without loyalty programs [3]. A recent report noted that 86% of Americans shoppers belong to at least one loyalty program [2].

Many loyalty programs offer incentives or benefits to customers in return for their personal and purchase data. This data provides retailers insight into the lives and behavior of their customers. Retailers not only want their customers to return and shop again, they also want to know what they buy, when they buy it, why they buy it, and what else they want to buy [10]. Membership is typically opt-in through an application process. Once customers become

members of a loyalty program, they may take advantage of the benefits of membership while providing valuable data to the retailer.

The enabler for data collection is the loyalty card issued to customers at the time of application submission. The card is a personal identifier of membership for a customer and is presented to the retailer at the time of purchase. By using loyalty cards, customers set in motion a series of data events that benefit themselves and retailers. Customers are automatically rewarded with program prices and benefits and the retailer systematically collects all purchase information such as: what was purchased, when it was purchased, where it was purchased, how much was paid, and method of payment. The collected data is added to all previous customer purchase information and stored for future data mining.

## DATA MINING AND LOYALTY PROGRAMS

Data mining, from a business context, is the analysis of data to find actionable patterns and rules. The hope is to employ the results to improve customer understanding and business performance. Traditional statistical models form the foundation for the practice, but modern data mining has introduced more intelligent models such as neural networks and support vector machines. There are two general forms of data mining: hypothesis testing and knowledge discovery [7]. Hypothesis testing is a supervised form of data mining where a specified theory is tested through experimentation. Experimenters hope to learn the relationship between actions and outcomes. Classification and prediction serve as two of the most common hypothesis testing models in practice today as companies build models to improve business performance and provide a level of risk management. For example, banks attempt to classify those customers most likely default on a loan before extending credit. Customer history helps form predictive models that are used with current data.

Knowledge discovery, on the other hand, is generally an unsupervised form of data mining for relationship identification through data examination. Clustering and market basket analysis are two common forms of knowledge discovery in retailing as each is a form of data examination without reliance on a preconceived notion or a dependent variable. For example, a business may want to create customer segments (clusters) to help identify profitable groups or a firm may want to examine the contents of a customer's market basket.

In retail loyalty programs, market basket analysis is commonly applied. Market basket analysis is a technique based on the theory that if you buy a certain group of items, you are more (or less) likely to buy another group of items [6]. Market basket analysis allows retailers to analyze information at its lowest level of granularity. At this level of detail, the data becomes a window into the events as they happen, understanding not only the quantity of the items that were purchased in a particular basket, but how and why these items were bought in conjunction with each other. This form of data mining allows retailers to examine analytics such as:

- Item affinity - calculating the likelihood of two or more items being purchased together,
- Cross-selling - marketing products to a customer that are related to other products the customer has included in a market basket,
- Item sensitivity - identifying items that customers have a high degree of price sensitivity,
- Driver items – identifying items that attract consumers to the store,
- Store to store analysis – evaluating shopping baskets at different store locations [4].

Using the information gained, retailers can better understand their members' needs and provide tailored services, deterministic location and promotion of goods, developing cross-promotional programs, or even developing programs to capture new customers. In addition, with purchase information, retailers can develop effective pricing strategies. So, while the goal of the retailer may appear to be to improve the customer shopping experience, it is ultimately to encourage loyalty and improve their profitability.

## DOWNSIDE TO LOYALTY PROGRAMS

While the benefits of a loyalty program appear to be transparent for both consumers and retailers, there are potential problems. First, there is a staggering cost associated with implementing a program. In the supermarket industry, programs can cost from 1% to 1.5% of revenue, while in other industries not so equipped for such programs, the cost can be as much as 5% of revenue [1]. In addition, programs need to mature at least 18 months to see any return on investment [1]. Second, loyal customers have been defined as those who take part in the program, not simply those who spend the most money or shop at a retailer most often. This often leads to a discord for customers who choose not to opt-in. A third problem involves the generation of shopper profiles by compiling the shopping patterns of a customer. While many shoppers are increasingly aware that loyalty data are being used to build profiles of their shopping habits for later use, they may not be aware that this data might be shared or sold to business partners, telemarketers, and direct mail solicitors [2]. Last, customers may not be aware that loyalty card programs are often outsourced to other companies. As such, it is not unreasonable to be concerned that profiles will be vulnerable to fraud and misuse [2]. While each of these has been discussed extensively in the literature, another potential problem of loyalty programs has received little attention: loyalty programs as a form of price discrimination.

## PRICE DISCRIMINATION

Price discrimination is defined by the U.S. Federal Trade Commission as 'a seller charging competing buyers different prices for the same "commodity" or discriminating in the provision of "allowances."'[13] A canonical example is the movie theater which offers a discount to customers with a valid student ID. For the purposes of our analysis, there are two fundamental forms of price discrimination: group pricing and menu pricing. The primary difference between these two forms of price discrimination is the availability of information on which the discriminating pricing strategy is conditioned. Generally, group pricing is more profitable than menu pricing since it capitalizes on a larger set of available information. In addition to merely facilitating the practice of price discrimination, data mining analyses may use the information gathered from loyalty programs to allow firms to engage in more intelligent forms of menu pricing.

When a seller engages in group pricing, it uses observable and verifiable information to condition the price it charges to a buyer. The information identifies heterogeneous characteristics among consumers which correlate with the buyer's willingness to pay or price sensitivity. Buyers are 'grouped' by these characteristics and each grouping is charged a different price, e.g. students and non-students.

When a seller engages in menu pricing, it is capitalizing on the fact that buyers are heterogeneous, but that those differences are unobservable and/or unverifiable. Instead of conditioning prices on these differences, the seller offers a menu of options from which buyers can choose. Theoretically, there is a menu option offered for each (unidentifiable) group of consumers. Prices for each option are set to provide the incentive for consumers to self-select into the option offered for their group. For example, when auto insurance companies offer various levels of deductibles, they are engaging in a form of menu pricing. Drivers with a higher level of intrinsic risk, which is unidentifiable, usually opt for a lower deductible, i.e. self-insure less.

Regardless of the type of price discrimination, the tactic itself is as much about setting lower prices to price sensitive consumers as it is about setting higher prices to those willing to pay. Whether prices are conditioned on observable information or multiple options are offered, the result is that the consumer base is segmented into groups which are fundamentally different, economically speaking. Students are typically more price sensitive relative to everyone else because their incomes are more constrained. Riskier drivers are willing to pay more for insurance since the likelihood of experiencing a loss is higher.

Consider a movie theater which offers a single price for admission to each show. If the movie theater offers a student discount, two things occur. On one hand, all persons with a valid student ID pay a lower price. In addition, since those individuals are now segmented out, the 'average' willingness to pay of the remaining customers is higher hence the non-discounted

price can be increased. The seller is able to capitalize on heterogeneities among consumers, increasing revenues and possibly profit.

Furthermore, when heterogeneities are unobservable, menu options may be created by versioning one's product. Early bird specials, matinee pricing, and even EX/LX/EX-L trim levels on vehicles are examples of versioning. By offering the matinee pricing, the movie theater increases its sales midday. However, it also segments its consumer base by providing the incentive for more price sensitive consumers to watch a movie at a different time of day. The result is that those who opt for the evening ticket have self-selected into a group that has lower price sensitivity, hence pays a higher price. In other words, the innovation of matinee pricing allows non-matinee prices to increase.

## LOYALTY PROGRAMS AND PRICE DISCRIMINATION

It is well understood that coupons and rebates are a form of menu pricing, or second degree price discrimination. Every consumer pays the retail price for a particular good or service. Those who opt to 'cut the coupon' or 'fill out the rebate form' have identified themselves as relatively more price sensitive. Therefore, a DVD which would otherwise sell for $20 may be priced at $24 with a $7 manufacturer's rebate. The cost of submitting the rebate, or cutting the coupon, aids in the segmentation of the market.

Loyalty programs behave in a similar fashion. The conventional wisdom of loyalty programs is that consumers (knowingly) 'sell' information on their buying behavior in return for lower retail prices. Whether or not consumers realize the full cost of participating in the loyalty program, they identify themselves as relatively more price sensitive by opting in. With these consumers segmented out of the market, retailers generate the freedom to increase retail prices to the remaining consumers. Of course, the ability to significantly increase price to non-members is mitigated by the strength of the competitive environment.

## DATA MINING AND PRICE DISCRIMINATION

As discussed previously, loyalty programs allow retailers to collect a plethora of information on consumer characteristics and buying behavior. Data mining facilitates the analysis of this information in order to allow the retailer to make more informed strategic decisions with respect to its operations (e.g. store layout, product placement, and pricing). Results from the data mining analysis may allow firms to either condition pricing over member/non-member or even based on product basket selection (i.e. sale prices on additional goods/services).

The ethical implications, let alone legal implications, of using this processed information to affect pricing decisions are unclear. Legally, price discrimination is explicitly regulated by the Robinson-Patman Act (1936), an amendment to Section 2 of the Clatyon Act (1914). According to the Federal Trade Commission, the Robinson-Patman Act covers [12]:

- Commodities, not services
- Purchases, not leases
- Goods which are of "like grade and quality"
- Pricing which has a detrimental effect on competition
- Transactions which are regarded as part of interstate commerce.

Essentially, price discrimination, as a business practice, is illegal under rule of reason. From an economic perspective, illegal price discrimination must harm the competitive environment, i.e. be considered 'in restraint of trade.'

Ethically, then, price discrimination may be acceptable if it does not restrain trade. When a seller modifies its pricing structure, there are two potential motivations behind the modification. On one hand, the seller may increase the price, reducing its sales. The result is extracting more value from the portion of its consumer base which continues to transact. On the other hand, the seller may lower its price, increasing its sales. In addition to attracting new customers into the market, the seller would be stealing market share from its competitors. Since price discrimination involves a combination of these, the net effect is ambiguous. Clearly, the modification must increase the profit of the seller. However, prima facie we do not know whether the environment has become more or less competitive.

Data mining is generally regarded as an ethically neutral practice. However, it does provide more information to sellers about correlations between consumer characteristics and buying behavior. A seller which incorporates data mining into its strategic decision making process can recover a prescription for its pricing strategy, specifically with respect to price discrimination, that may be considered 'unethical.' The result of the data mining process may illuminate the fact that the seller is in a particularly lucrative competitive position, poised to steal market share by adjusting its pricing structure. However, the same process may reveal that the firm could increase its profitability by sacrificing market share in return for higher margins. The decision to do this would harm consumers both by reducing the volume of output consumed as well as extracting more from remaining consumers. The strategic decision then becomes an ethical dilemma, whether or not it is considered a violation of the governing competition policy. Although the spirit of our antitrust laws would regard such behavior as a violation, it may not be technically so. Therein lies the ethical implications of using data mining to extract information about consumer behavior.

## CONCLUSION

Many consumers have opted into shoppers' clubs through participation in loyalty programs. As members, they are able to reap the benefit of membership for the small price of their purchasing information. The combination of this information with data mining helps retailers improve shopping experiences and decision making.

While many of the uses appear to be fair to the member, some may be unethical. One in particular, price discrimination, may put a retailer in a lucrative competitive position.

Through our discussion of price discrimination, we showed how it can be applied in a manner to benefit some and hurt others. Ultimately, the application is ambiguous. However retailers must be hypersensitive to not harm the competitive environment or else the practice may be deemed not only unethical, but illegal.

It is our intention for this brief piece to stoke the interest of the research community to investigate the many possible ethical perspectives of loyalty programs. To be sure, loyalty programs benefit their members, but at what cost? The importance of finding the answer to this question cannot be understated.

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