

Shareable Coupons

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Abstract

Firms try new promotion campaigns to continually engage their customers. A recent phenomenon is of shareable coupons that customers can redeem for themselves and share with friends. Despite the increasing popularity of shareable coupons in practice, little research has examined why and under what conditions they succeed. We evaluate the causal impact of shareable coupons on redemption using data from two large-scale field experiments in which customers were randomly exposed to either shareable or non-shareable (i.e., regular) coupons of equal monetary value. An aggregate-level analysis of revenues in the shareable-coupon group shows that the number of the coupons shared has a positive impact on revenues. A comparison of coupon redemption across groups, however, shows that shareable coupons are less effective than regular coupons in generating revenues among customers who receive the communication directly from the firm. An analysis of heterogeneity in the treatment effect shows that customer loyalty is a key moderator for these findings. In particular, high-loyalty customers, when exposed to shareable coupons, redeem similar to those exposed to regular coupons, and share with friends, which leads to incremental revenues. In contrast, low-loyalty customers, when exposed to shareable coupons, redeem far less than those exposed to regular coupons, and have limited sharing. The latter results provide a cautionary note for firms using shareable promotions and indicate loyalty-based targeting will lead to more effective campaigns. We propose a social priming as an explanation to describe the data pattern. Results from a third experiment with participants on Amazon Mechanical Turk corroborate our proposed explanation.

Keywords: Shareable promotions, Mobile coupons, Field experiments

1. Introduction

Understanding how consumers respond to coupon promotions has long been an object of theoretical and empirical research in marketing (e.g., Reibstein and Traver 1982, Narasimhan 1984, Neslin 1990, Raju, Dhar, and Morrison 1994). Firms across many industries spend a significant portion of their marketing budgets on such promotions. Why some customers redeem while others do not have important implications for managers to design better promotion campaigns.

With the advent of loyalty programs and granular customer-level transaction data, firms can achieve better tracking of redemption behavior and use personalized marketing offers to enhance customer engagement (e.g., Rossi, McCulloch, and Allenby 1996, Thomas, Reinartz, and Kumar 2004, Venkatesan and Farris 2012). For instance, CVS sends coupons to its ExtraCare loyalty card members based on their historical purchase amount and basket composition. Several other retailers (e.g., Target, Walgreens) also mail personalized communications and offers. Despite the deployment of targeted promotions, coupon redemptions continue to decline. While the use of coupons spiked in 2009-2011, likely due to the economic downturn, the number of coupons redeemed has declined from a high of 3.5 Billion in 2011 to 2.8 Billion in 2014.¹ Facing this decline, firms are continually trying to find new ways of engaging their customers in promotion campaigns.

One interesting marketing phenomenon is that of shareable coupons that customers can redeem for themselves and share with friends, family, or other people who can redeem too. This type of promotion is particularly appealing for retailers as they can leverage word-of-mouth to publicize promotions. Given that a large majority of customers trust recommendations from

¹ INMAR 2015 Promotion Industry Analysis, available at: <https://www.inmar.com/article/inmar-2015-promotion-industry-analysis-available-for-free-download/>, last accessed on March 18, 2017.

friends and family more so than any other form of advertising, such word-of-mouth can be very effective in enhancing the redemption of coupons.² Consider some examples in the marketplace. Wynn Casino sends promotions to customers to redeem for themselves but also includes a call-to-action link for them to share with others (see Figure 1a). Customers can send the promotion to others by clicking the “Forward this to friends” link that appears at the bottom of the first image of Figure 1a, where they are subsequently (the second image of Figure 1a) asked to provide the contact information of their friends. While some firms allow customers to share the promotions online, others allow them to do so offline. For instance, the fabric and craft retailer Jo-Ann ran a promotion in which customers received a 20% discount they could use for themselves and another one they could share with a friend (see Figure 1b). While the two examples in Figure 1 differ from each other in terms of the mode of communication among customers and the number of coupons that could be shared, both rely on leveraging connections among customers. Firms first communicate with a few customers, who in turn may communicate with others. The latter communication can lead to incremental revenues for the firm from any promotion campaigns assuming that the call-to-action for sharing does not influence their own propensity to redeem.

Insert Figure 1 about here

Anecdotal evidence suggests that companies employing shareable coupons have found success.³ The results in Godes and Mayzlin (2009) regarding the positive relationship between aggregate word-of-mouth in the marketplace and week-to-week sales broadly support this notion. However, their results do not directly speak to the causal impact of a call-to-action for sharing on individual-level customer behavior. In particular, which customers are likely to respond to such a

² Nielsen reports that 92% of consumers around the world trust recommendations from friends and family more so than any other form of advertising. Please see <http://www.nielsen.com/us/en/insights/news/2012/consumer-trust-in-online-social-and-mobile-advertising-grows.html>, last accessed on March 2, 2017.

³ <http://blog.kouponmedia.com/mobile-coupons-and-social-sharing>, last accessed on March 3, 2017.

call-to-action? What, if any, is the relationship between their own redemption of the coupon and its sharing? How do such coupons perform for redemption (and revenues) compared to non-shareable (regular) coupons? Understanding the reasons for the success of shareable coupons as compared to regular coupons is important managerially as it determines whether they should be employed en masse or targeted to a select group of customers who can share it with other customers. The latter is a selective strategy that proposes not to allocate resources on customers who may not respond to the call-to-action for sharing.

In this research, we conduct the first experimental evaluation of shareable coupons and provide evidence for their redemption. The use of controlled field experiments allows us to draw valid causal inferences about coupon redemption without being concerned with issues typically associated with historical data analysis, e.g., incomplete knowledge about firms' targeting rules and endogenous selection of customers. Specifically, we conducted two large-scale field experiments in collaboration with a global beauty company. In both studies, customers were randomly assigned to one of two groups: (1) a group that received a price discount coupon that they could use only for themselves (termed as the control, regular-coupon group) and (2) a group that received the price discount coupon that they could use for themselves and in addition share with friends (termed as the treatment, shareable-coupon group). In the shareable-coupon condition, there were no constraints imposed for the sequence of redeeming and/or sharing similar to the examples shown in Figure 1 (i.e., customers could redeem without sharing or share without redeeming the coupon for themselves).

An aggregate-level analysis of revenues in the shareable-coupon group shows that the number of the coupons shared has a positive impact on revenues generated, which is largely consistent with past work documenting the impact of word-of-mouth on sales (e.g., Godes and

Mayzlin 2009, Berger 2014). Interestingly, however, a comparison between the treatment and control group shows that shareable coupons are less effective than regular coupons in generating revenues among customers who directly receive the communication from the firm. An analysis of heterogeneity in the treatment effect shows that customer loyalty is a key moderator of our findings. High-loyalty customers (where the measure of behavioral loyalty is based on transactions prior to the field test) redeem the shareable coupons for themselves, similarly to those exposed to regular coupons, and also share with friends. These customers then become brand ambassadors, and generate incremental revenues from sharing the offer. In contrast, low-loyalty customers, when exposed to shareable coupons, redeem far less during the campaign period than those exposed to regular coupons, and have limited sharing. The latter indicates that loyalty-based targeting of shareable campaigns should generate more revenues.

Our pattern of results is robust to the type of promotion. While the main study involved a price reduction coupon, we replicated the findings with a second field study with free sample promotions. To explain the robust pattern of results, we propose a social priming as an underlying mechanism when customers are exposed to shareable coupons. Finally, we provide additional evidence for our proposed mechanism from a third experiment using participants on Amazon Mechanical Turk.

We proceed as follows. Section 2 describes our main field experiment and its related institutional details. Section 3 quantifies the impact of shareable coupons relative to regular coupons on their redemption behavior and assesses the revenue implications of targeting customers with shareable coupons. In Section 4, we describe a second field study to test whether our findings are generalizable beyond the type of promotion used in the main study. In Section 5, we discuss our proposed explanation, other alternative mechanisms that may be at work, and

describe a third experiment using participants on Amazon Mechanical Turk to further corroborate our explanation. Section 6 concludes with directions for further work.

2. Experiment 1: Main Experiment

To study the effects of shareable coupons, as compared to regular coupons, on customer behavior, we conducted a randomized field experiment with a large global beauty company. The company is a retailer that sells its own brand of beauty (e.g., skincare, makeup) products. It promotes products using different types of coupons (e.g., price discount, free sample). The beauty industry is an attractive context for our research as firms in this industry routinely experiment with new forms of promotions and target customers with personalized marketing offers. Similar to other companies in this industry, the focal company was keen on understanding the impact of shareable coupons on customer response.

To identify the casual impact of sharable coupons as compared to regular coupons, we controlled for four factors that are worth discussing. First, only members of the firm's loyalty program were eligible to participate in the experiment and receive the campaign communication directly from the firm (primary recipients). Limiting the primary recipients to be members of the firm's loyalty program allowed us to track all of their purchases in the before- and within-experiment period. Second, exposure to shareable and regular coupons was randomized across the customers included in the study. In particular, we randomly distributed mobile coupons, either regular or sharable, to customers via their mobile phones.⁴ Third, we were able to track the coupons shared by primary recipients and purchases made by customers with whom the coupons

⁴When customers joined the firm's loyalty program, they were asked to provide their name and mobile phone number so that they can receive promotions and other marketing communication from the firm. Mobile or paperless coupons used in our main experiment help alleviate selection bias as compared to paper coupons if certain type of customers are more likely to clip paper coupons and redeem than others.

were shared (secondary recipients). In addition, the purchases from secondary recipients could be linked to their corresponding primary recipient. Such linkage allowed us to measure the impact of shareable coupons on the firm's revenues with and without including the purchases made by secondary recipients. Finally, we controlled for other marketing efforts during the campaign period as all customers included in the study were exposed to no other promotions.

2.1 Experiment Design

As our main objective was to compare the performance of shareable versus regular coupons for redemption, the main experiment required only two conditions, i.e., regular-coupon (control) group and shareable-coupon (treatment) group. All loyalty program members who had purchased from the retailer in the before-experiment period spanning from June 2013 to June 2014 (13 months) prior to the intervention were eligible for inclusion in the main field test. A total of 8,543 customers were assigned into the two conditions: 4,252 customers (49%) to the control group and the remaining 4,291 (51%) to the treatment group.

All customers in both conditions were contacted by the firm on the same day at the same time via their mobile phones in July 2014 for a campaign spanning a two-week period. The campaign offered a price discount coupon that recipients could redeem within the campaign period while purchasing any product that the retailer offered. In the regular-coupon group, the coupon could be redeemed only by the customer who received the campaign communication directly from the firm. The primary recipient in the shareable-coupon group, similar to the regular-coupon group, could redeem the coupon for herself. In addition, she could share the communication with as many other people as she wished. It was made clear to customers that they could use the coupon for themselves as well as share the offer with friends, family or other

people who could also redeem. The rest of the campaign communication (e.g., offer value, content) was the exactly same between the two groups.

2.2 Experiment Implementation

The key difference between the coupons received by the shareable-coupon group and regular-coupon group is that coupon shareability is featured in the communication to the former but not in the latter. The implementation of the promotion for the control group was straightforward as it was common practice to give a coupon targeted to a primary recipient.

The general procedure of our experiment for the treatment group was similar to the example of Wynn Casino shown in Figure 1. But our implementation differs from that example in a few important ways and merits additional discussion. First, customers in the example of Wynn Casino are required to complete the information (e.g., name, email) of their friends to share the campaign. While such online sharing is easier than offline person-to-person sharing, e.g., Jo-Ann shown in Figure 1, it is still burdensome, as customers have to enter the name and contact information of their friends with accuracy. In order to address this concern, we used an instant messaging application (e.g., WhatsApp) in which customers in the treatment group could share the offer with others with little burden. We selected instant messaging service because of its ease for customers to share the communication with friends and its popularity among customers. Instant messaging applications use the Internet to send text messages, images, videos, and audio media messages to other users around the world using standard cellular mobile numbers. Customers in the treatment group could click a “share” button displayed in the campaign communication that will lead to the instant messaging service, select the names of (secondary) recipients among their friends listed in the instant messaging service, and click the “send” button to disseminate the coupon to the others. The instant message service automatically

delivered a message to each (secondary) recipient's account separately, and each secondary recipient received the message as one-to-one personal communication from a primary recipient. Hence, in the shareable-coupon group, the firm gave a price discount as a personal offer to primary recipients who in turn could share the coupon as a personal offer to secondary recipients.

Second, a primary recipient in the shareable-coupon group could select as many secondary recipients as she wished in a single "send." Moreover, she could make as many shares (sends) as possible within the campaign period. Once a secondary recipient clicked the coupon in the communication, she could clip it and redeem during the campaign period while purchasing any product that the retailer offered. In the firm's database, her purchase was then associated with the corresponding primary recipient. Third, customers in the shareable-coupon group were not required to purchase in order to share the coupon with their friends, and could share it at any time within the campaign period. Thus, in contrast to sequential activities, which require the completion of one activity in order for customers to engage in another activity, there was no prerequisite for sharing the offer, and purchasing and sharing were not sequential by design (e.g., Schweidel, Park, and Jamal 2014). Figure 2 shows the design of the main study as well as the set of decisions the customers, both primary and secondary recipients, faced after the intervention.

Insert Figure 2 about here

In the study, a prerequisite for coupon redemption was membership of the firm's loyalty program.⁵ Recall that all primary recipients between the regular-coupon and the shareable-coupon group were member customers in the loyalty program. If a secondary recipient in the shareable-coupon group was already a member of the firm's loyalty program, she could clip the

⁵ It is common in practice to make membership of loyalty program as a prerequisite for coupon redemption. Without doing so, a firm cannot track customer behavior and assess the impact of the promotional coupon on revenues.

mobile coupon by simply clicking on the communication and redeem it. If a secondary recipient was not a member of the loyalty program, she had to join the loyalty program to redeem.

3. Results from Main Experiment

We assess the impact of shareable coupons on several measures of customer behavior. For all primary recipients in both groups, we have data on whether or not they redeemed the coupon within the campaign period, and if so how much they purchased from the retailer. In addition, for the customers assigned to the shareable-coupon group, we have data on whether they shared the offer with others (if yes, how many times). For secondary recipients, we have purchase data for those who redeemed the coupon within the campaign period.⁶ Hence, our data enables us to analyze the impact of shareable coupons on the firm's revenues with and without including the purchases made by secondary recipients.

Table 1 describes the individual-level transaction data over a period of 13 months prior to the experiment. It covers detailed purchase data for the 8,543 primary recipients who were part of the randomized field experiment. We checked the face validity of the randomization between the regular- and the shareable-coupon group, and found that customer behavior in the pre-campaign period did not vary with the type of coupons received. Below we present the results at the aggregate and individual levels, then turn our attention to an analysis of heterogeneity in the treatment effect, and finally to the value of a targeted campaign.

Insert Table 1 about here

⁶ We tracked individual-level purchase data of all primary recipients at the firm's loyalty program, including secondary recipients who joined the loyalty program at the time of their transactions within the campaign period. By comparing this data with point-of-sales data, we confirmed that there was only a single secondary recipient who joined the firm's loyalty program during the campaign period (i.e., she was not a member prior to the experiment). As the partnering company already has a large number of customers as part of its loyalty program and is in a mature stage of the business, the negligible impact of a campaign on customer acquisition with shareable coupons is not surprising.

3.1 Aggregate-level Analysis

One way of documenting the aggregate impact of shareable coupons on revenues is to quantify the relationship between the number of the coupons shared by primary recipients and the revenues generated.⁷ In our context, we computed both the daily number of share occasions and the daily revenues (including both primary and secondary recipients) in the shareable-coupon group. A regression analysis showed that the number of the coupons shared daily is positively related to the revenues generated daily ($\beta = 1.736$, $p = 0.010$). This result is broadly consistent with findings in the literature that have documented a positive relationship between word-of-mouth and revenues (e.g., Godes and Mayzlin 2009, Berger 2014).

A second way to assess the aggregate impact of shareable coupons is by comparing the revenues between the treatment and control group. To this end, for the shareable-coupon group, we computed the revenues originating from all secondary recipients corresponding to a primary recipient and attributed them to that primary recipient (this may be zero if there was no revenue generated from secondary recipients). We term this revenue as the “social-value” of a primary recipient (e.g., Nair, Manchanda, and Bhatia 2010). Upon adding the self- and social-value of each primary recipient (termed as total-value) and averaging across the customers in the shareable-coupon group, we find that the total revenue is on average \$2.72. The average revenue of the regular-coupon group is \$2.73, which is virtually indistinguishable ($p = .997$). In our main field test, thus, on average the group with shareable coupons does not generate higher revenues compared to that with regular coupons.

⁷ A primary recipient could select as many secondary recipients as she wanted. As sharing was done through the instant messaging service and due to privacy concerns, we cannot observe how many friends a primary recipient selected in a single share occasion. What we were able to observe were the number of share occasions made by each primary recipient (but not how many friends a primary recipient selected in a single share occasion) and the number of coupons downloaded by secondary recipients for each primary recipient. When secondary recipients who clipped the coupon redeemed in store, we were able to identify them and observe their purchase behavior, which could be associated with the corresponding primary recipient.

At first glance, the two aggregate results described above are at odds. On the one hand, the shareable-coupon group should have incremental revenues through coupon sharing. On the other hand, the total revenues between the two groups are indistinguishable. Clearly, an investigation of individual-level redemptions to the two types of coupons is warranted.

3.2 Individual-level Analysis

We begin by assessing whether the shareable coupon is more effective than the regular coupon for converting a customer (primary recipient) to purchase within the campaign period. Figure 3 shows the redemption probability for a primary recipient by whether he or she was exposed to regular or shareable coupons. Interestingly, the regular coupon is redeemed more so than the shareable coupon. The difference between the two groups is striking. Specifically, whereas 9.05% of customers in the regular-coupon group purchased within the campaign period, only 7.22% did so in the shareable-coupon group ($p = .002$). The average revenue conditional on redemption is not statistically different across the groups, \$30.16 in the regular-coupon group and \$32.43 in the shareable-coupon group ($p = .391$). Taken together, while the shareable coupon did not affect the purchase amount within the campaign period, it had a strong negative impact on its redemption propensity. The average revenue of the regular-coupon group is \$2.73 while that of the shareable-coupon group among primary recipients is \$2.34 ($p = .170$). For the shareable-coupon group, a comparison of the average revenues between primary recipients only (\$2.34) and the total revenues (\$2.72 as noted in the aggregate-level analysis) indicates that the remaining ($\$0.38 = \$2.72 - \$2.34$) is due to incremental revenues from secondary recipients, i.e., social-value.

Insert Figure 3 about here

We next turn our attention to an analysis of heterogeneity in the treatment effect to document how the redemption propensity of the shareable coupon varies across the customer base. Understanding such variation in campaign response is important theoretically and managerially. We leverage previous work on customer loyalty that suggests it can be a moderator of various marketing activities (e.g., Blattberg, Kim, and Neslin 2008, Kumar and Shah 2004). Customer loyalty has both behavioral and attitudinal components. Given that we have a field test with no surveys sent to customers after the experiment, we focus on behavioral loyalty and rely on recency, frequency, and monetary (RFM) measures, which summarize customers' past transaction history (e.g., Kumar and Shah 2004). Thus, we use RFM characteristics based on the individual-level data over the 13-month pre-campaign period to address customer heterogeneity in campaign response.

To obtain preliminary evidence for whether measures of behavioral loyalty moderate the impact of the coupon on customer behavior, we conduct a median split on each of the three RFM characteristics and compare the effect of the two types of coupons above and below the median.⁸ Table 2 shows that the effect of shareable coupons on customer behavior during the campaign period (redemption and purchase amount) is heterogeneous. The effect of shareable coupons on the propensity of the primary recipients to redeem the coupon is less negative for customers with lower recency, higher frequency, and higher monetary value. In particular, while the difference in the propensity to redeem between the customers in the regular- and the shareable-coupon group is 1.83 percentage points, those customers with higher frequency (monetary value) show a difference of only 0.86 (1.08) percentage points. In contrast, customers with lower frequency

⁸ For the frequency measure, we checked both the number of purchases and the number of purchased products in the pre-campaign period. The results from both metrics are qualitatively similar. Hence, we reported the results with the number of purchases as the frequency measure.

(monetary value) show a larger difference of 2.57 (2.58) percentage points. The impact on customer revenues is also heterogeneous. The shareable coupon increased revenue for customers with lower recency, higher frequency, and higher monetary value. Nevertheless, the magnitude of the effect on revenues is small, ranging from $-\$3.90$ to $\$0.30$ across all groups. It appears that the primary impact of exposure to shareable coupons is on altering the propensity to redeem.

Insert Table 2 about here

The results suggest that the effects of exposure to shareable versus regular coupons vary with customers' RFM characteristics. To better quantify the effects, we consider all variables together by estimating a binary logit model using the coupon redemption of the primary recipient as the dependent variable. The analysis is straightforward because of the randomization induced by the field test. In particular, we model the probability of primary recipient i to redeem the coupon within the campaign period as follows:

$$\text{Prob}(\text{Redeem}_i | \boldsymbol{\beta}, S_i, \mathbf{X}_i) = \text{Prob}(\beta_0 + \beta_1 S_i + \beta_2 \mathbf{X}_i + \beta_3 S_i \mathbf{X}_i + \varepsilon_i > 0), \quad (1)$$

where S_i is a dummy variable that takes a value of 1 if the customer received the shareable coupon and 0 otherwise (i.e., received the regular coupon). The vector of covariates \mathbf{X}_i contains RFM characteristics based on pre-campaign behavior. The vector $\boldsymbol{\beta}$ contains the parameters, including the constant (β_0). The parameter β_1 measures the effect of a customer being exposed to shareable coupons on her propensity to redeem while the parameter β_2 controls for the effect of RFM characteristics. The parameter β_3 measures whether being exposed to shareable coupons moderates the impact of RFM characteristics on the propensity to redeem. Finally, ε_i denotes the error term, which is assumed to be logistically distributed with mean 0 and variance $\frac{\pi^2}{3}$. We mean-center all continuous variables (e.g., frequency) so that the main effect of the treatment

(β_1) in the model with the full set of interactions represents the effect corresponding to the “average” customer.

Table 3 shows the results for underlying drivers for coupon redemption. Column 1 presents results for the specification implied by Equation (1) but without the RFM controls. The point estimate suggests that exposure to shareable coupons decreased the propensity to redeem within the campaign period. The results in column 2 repeat the analysis with the controls for the RFM characteristics. The result shows that the pre-campaign descriptors have a significant impact on the propensity of the primary recipient to respond to the campaign. Note that after controlling for RFM measures, the main result holds. This is reassuring and suggests that our result is not an artifact of a failure of randomization. In columns 3-5, we test for heterogeneity in the effects of shareable coupons on redemption by interacting the RFM characteristics (one variable at a time) with a binary indicator for whether the customer was exposed to shareable coupons. A comparison of these three columns indicates that the redemption of the shareable coupon is higher for customers with higher frequency and monetary value. The model specification in column 6 includes all interactions with the RFM characteristics. None of the interactions is significant. The null effects are likely due to a high correlation between frequency and monetary value in our data ($r = 0.64$) and a moderate correlation between recency and frequency ($r = -0.36$). In addition, the model specification has a worse AIC than those in columns 4 and 5.

To address the concern of collinearity, we conducted a factor analysis using all three RFM measures. The factor analysis revealed a single factor accounting for 64% of the total variance in the three variables.⁹ We interpret this factor as “customer loyalty.” In column 7, we

⁹ The loadings of recency, frequency and monetary value on the single factor were -0.66 , 0.87 and 0.84 , respectively. Thus, lower recency, higher frequency and higher monetary corresponds to a higher factor score.

apply a model specification with customer loyalty as an explanatory variable, together with the indicator variable for exposure to shareable coupons and their interaction. The results indicate that the effectiveness of shareable coupons improves with customer loyalty.

Insert Table 3 about here

Another key measure of customer behavior is the amount of coupon sharing within the treatment group. In the study, of the 4,291 primary recipients in the treatment group, 359 (8.37%) customers shared the offer with friends, family or other people, while 759 secondary recipients downloaded the coupon and 68 of them redeemed. Note that we can link each of the 68 secondary recipients with the corresponding primary customer who shared the offer.¹⁰ We also find that the primary recipients in the treatment group who shared the coupon have a significantly higher redemption rate (45.68%) as compared to those who do not (3.71%). The latter result shows that customers who like to redeem the coupon for themselves are also more likely to share.

We also assess the underlying drivers of sharing behavior. We estimate a logit model for whether or not the primary recipient in the treatment group shared the coupon, using their pre-campaign descriptives. Table 4 shows the results. Column 1 presents the analysis with the controls for the RFM characteristics. The result suggests that customers who had purchased recently and frequently are likely to share the offer with their friends. Similar to the analysis for the propensity to redeem the coupon, we address the concern of collinearity among the RFM variables by conducting a factor analysis. The results in column 2 indicate that sharing is significantly higher for customers with higher customer loyalty.

¹⁰ We cannot observe any data for secondary recipients who did not redeem the coupon (691 secondary recipients). This is because primary recipients in the shareable-coupon group, not the firm, communicated the offer with them, and thus the firm can track their purchases only when they redeem the coupon.

Insert Table 4 about here

3.3 The Value of Targeted Campaign

Our results discussed in section 3.2 suggest that shareable coupons are more suitable for high-loyalty customers. While the results are statistically robust to many specifications, we have yet to establish whether they are economically meaningful. We do so by documenting the value of targeted campaign with shareable coupons using the data from the main study. For the purpose of illustration, we select pre-campaign frequency measure as a basis for customer segmentation. We conduct a median split on the frequency metric using customer transactions prior to the intervention and create four cells by comparing the regular-coupon versus the shareable-coupon groups with high and low frequency, i.e., high- and low-customer loyalty. Using the data from our randomized field experiment, we then compare customer behavior across cells within the campaign period.

Table 5 shows redemption behavior and customer revenues if the company were to send regular versus shareable coupons to both low- and high-loyalty segments. The two columns under “Low Loyalty” in Table 5 indicate that low-loyalty customers have a lower propensity to redeem upon being exposed to shareable coupons (4.26%) as compared to regular coupons (6.83%). Combining the propensity to redeem with the respective conditional purchase amount, the average self-value in the shareable-coupon group (\$1.23) is lower than that in the regular-coupon group (\$1.93). For the shareable-coupon group, we combine the self-value together with the social-value associated with the primary recipients to determine the average total-value (\$1.45). The total-value in the shareable-coupon group is lower than the value from the regular-coupon group.

Insert Table 5 about here

The two columns under “High Loyalty” in Table 5 indicate that high-loyalty customers have a similar propensity to redeem the coupon upon being exposed to either shareable coupons (11.13%) or regular coupons (11.99%). Combining the propensity to redeem the coupon with the respective conditional purchase amount, the average self-value in the shareable-coupon group (\$3.81) is similar to that in the regular-coupon group (\$3.79). In the shareable-coupon group, the self-value together with the social-value associated with the primary recipients determines the total-value (\$4.42). The total-value in the shareable-coupon group is higher than the value from the regular-coupon group.

As described in the aggregate-level analysis, a mass campaign that does not differentiate between high- and low-loyalty customers while communicating with shareable coupons would yield \$2.72 in expected revenues. A regular coupon to all customers yields very similar expected revenues (\$2.73). Alternatively, one could target a regular coupon to low-loyalty customers and a shareable coupon to high-loyalty customers. Such targeting would lead to \$3.01 in expected revenues, i.e., approximately a 10.26% increase in revenues as compared to either of the two mass campaigns. Taken together, shareable coupons are suitable only for the high-loyalty customers. The low-loyalty customers could be targeted with regular, non-shareable, coupons because the inclusion of shareability features in the communication lowers their response to the coupon.

4. Experiment 2: Type of Promotion

Our results in the main experiment suggest that the regular coupon is more effective for converting a customer to purchase than the shareable coupon, and the effect size varies by

customer loyalty. In this section, we assess whether our findings are generalizable beyond the type of promotion used (i.e., a price promotion).

One concern with the use of price promotions is that some primary recipients are less likely to share as it may signal they are ones who care about price discounts (this argument though does not explain why low-loyalty consumers should redeem shareable coupons less so for themselves than regular coupons). Hence, whether the effects extend to non-price promotions is an important empirical question.

For this study, we employed a non-price promotion using free sample coupon because it is very common in practice. Researchers have documented that price and non-price promotions affect customer behavior differently (e.g., Lammers 1991, Schindler 1998). Diamond and Campbell (1989), for example, argue that price discounts are commensurable with the product's price, while free sample promotions are not directly comparable. As a result, price discounts are framed as "reduced losses" and free samples are framed as "segregated gains," which may result in consumers reacting differently to price and non-price promotions that are equivalent monetarily. Therefore, it is theoretically important to examine whether the findings in the main study can extend to a non-price promotion.

The experiment was run by a retailer owned by the same company as in our main study. It was run approximately at the same time as our first study. In experiment 2, customers receive free samples upon purchasing any among featured products in the communication. A total of 48,175 customers were randomized into the two groups in the experiment. We randomly assigned 14,467 customers (30%) to the control (regular-coupon) group and the remaining 33,708 to the treatment (shareable-coupon) group.¹¹ There was no overlap between these

¹¹ Table A in Appendix presents the individual-level data in the pre-campaign period. It supports that there is no systematic variation between the two conditions.

customers and those in our main analysis. Customers in both groups were contacted by the firm on the same day at the same time via their mobile phones. The communication included a few featured products, and if customers purchased any of those featured products, they could receive free samples. In the regular-coupon group, free samples could be obtained only by primary recipients. In the shareable-coupon group, primary recipients could redeem free sample coupon for themselves and also share the offer with their friends. Thus, the mode of communication with customers and how mobile coupons were distributed were identical to the main study. In addition, the rest of the campaign communication remained the same between the groups.

We find that 1.31% of customers in the regular-coupon group redeem as compared to 1.09% in the shareable-coupon group ($p < 0.045$). This finding is in line with what we found in the main study, suggesting that our key finding is robust to the type of promotion. In addition, we conducted a median split on the frequency metric using customer transaction prior to the intervention and create four cells by comparing the regular-coupon versus the shareable-coupon groups with high and low frequency.¹² Our results suggest that high-loyalty customers have a similar propensity to redeem the coupon being exposed to either regular coupons or shareable coupons (1.97% vs. 1.72%, respectively, p -value = 0.221). For low-loyalty customers, on the other hand, we find that there is a difference in the redemption propensity between the control and the treatment group (0.79% vs. 0.60%, respectively, p -value = 0.093). In summary, our key findings are robust to whether the promotion is with price discounts or not.

5. Underlying Mechanism and Alternative Explanations

¹² As the number of purchases has limited variation among the customers included in this study, we reported the results with the number of products purchased as the frequency measure.

Having established the robustness of the results, in this section we propose an underlying mechanism (social priming) that can explain the pattern of our findings. We also investigate a few alternative explanations (promotion exclusivity, self-interested behavior) for the results. Finally, we discuss the results of a third experiment that supports our proposed mechanism.

5.1 Underlying Mechanism: Social Priming

An exposure to shareable coupons primes customers to think about the preferences of friends, family or other people (e.g., Barasch and Berger 2014). We propose that such introspection can lead consumers to update their preferences for the offer but will do so differentially based on past experience with the firm (which we term as behavioral loyalty). We base our argument on the concept of homophily, i.e., friends are likely to be similar to each other for a wide range of socio-demographic attributes and preferences (McPherson, Smith-Lovin, and Cook 2001). Recent work also suggests that consumers perceive their friends to be similar in beliefs and attitudes and that they make inferences about friends' opinions from their own views (e.g., Goel, Mason, and Watts 2010). Please see experiment 3 in Section 5.3 for empirical evidence of homophily in our context.

How may low- and high-loyalty customers differentially update their preferences for the coupon? For primary recipients who are less loyal to the firm, they will likely have friends who also do not value the offer from the firm. As these primary recipients do not purchase from the retailer frequently, they are likely to be more uncertain about the value of the offer (e.g., Moorthy, Ratchford, and Talukdar 1997). When shareability features in the communication prompted them to think about how their friends may respond, they would be less favorable toward the offer. This updated preference, in turn, will lead to a lower redemption of shareable coupons as compared to regular coupons (which do not nudge customers to think about how

friends may respond). The underlying process bears resemblance to an “echo chamber” wherein selective exposure to content generates polarized communities having similar consumption patterns (e.g., Del Vicario et al. 2016). In contrast, primary recipients who are more loyal to the firm will likely have friends who value its offerings. Such primary recipients buy frequently and would be more certain about the value of the offer. Thus, priming friends is less likely to change their own valuation (as there is little need to update preferences) compared to those who receive regular coupons.¹³

5.2 Alternative Explanations

5.2.1 Promotion Exclusivity

It is possible that shareable coupons appear less attractive, as compared to regular coupons, as they are not exclusive. Past work on coupons suggests that consumers’ valuation of coupons depend on their exclusivity, in addition to their monetary savings (e.g., Chandon, Wansink, and Laurent 2000). Consumers tend to view exclusivity positively (e.g., Dreze and Nunes 2009) and exclusive offers lead to higher redemption rates (e.g., Feinberg, Krishna, and Zhang 2002, Venkatesan and Farris 2012). Thus, our pattern of a lower aggregate redemption for shareable coupons (compared to regular coupons) may arise from its non-exclusivity. While plausible, the data on individual-level redemption from our studies does not support this mechanism. If exclusivity were the primary driver of a low redemption of shareable coupons, customers with high loyalty to the firm should be less responsive to the offer as compared to customers with low loyalty. This is because the former has a stronger relationship with the firm and may expect exclusive offers that reward them for their loyalty. In the main study, however, we find the

¹³ Our argument is similar in spirit to Ackerberg (2001) that empirically explores the impact of advertising on purchase on consumer packaged goods and suggests that experience with the product should moderate the impact of advertising.

customers who have high propensity to redeem the coupon (the high-loyalty customers) also have a high propensity to share the coupon with others.

5.2.2 Self-interested Behavior

It is possible that customers may share the coupon with others because they want to game the system. For instance, customers may share the coupon with friends because they want to use multiple coupons for their own purchases. High-loyalty customers (who purchase more from the retailer) are more likely to show such behavior because they could get more discounts by applying more coupons. Some institutional details of our context alleviate the concern. In our research context, each mobile coupon is linked to the mobile phone number of a customer in the firm's loyalty program. Hence, only a single coupon could be redeemed per customer (i.e., mobile phone number) within the campaign period. This is an increasingly common practice among retailers that track individual-level transactions. In order to redeem multiple coupons, a primary recipient would need to bring mobile phones associated with other customers in the loyalty program (or secondary recipients come along on a joint shopping trip). While possible, our analysis shows that of 359 primary recipients who shared the offer with friends, only 32 (8.91%) pairs of primary and secondary recipients redeemed the coupon within the campaign period. In addition, an analysis of the difference (in days) of when a secondary recipient and her associated primary recipient redeemed the coupon shows that it is an average of 3.07 days (std. dev. = 3.55 days). Moreover, this explanation cannot capture why low-loyalty customers redeem shareable coupons less so for themselves as compared to regular coupons. Thus, self-interested behavior of customers is unlikely to explain our data pattern.

5.3 Experiment 3: More Evidence on the Proposed Mechanism

The alternative explanation of self-interested behavior discussed above is related with the institutional details of our field tests (e.g., a primary recipient may use multiple coupons by sharing with friends and then going shopping with them). Our proposed explanation of social priming, in contrast, should be at work even when primary recipients merely think about the preferences of their friends without really sharing the coupon. To test whether our findings can extend to other contexts with no actual sharing of coupons, we designed an experiment in which consumers stated their intention to redeem a shareable coupon and share it with friends in a hypothetical scenario. If the pattern of results in this study is similar to the one in the two field studies, it provides additional corroboration for our proposed mechanism.

Participants were 187 members of a subject pool recruited on Amazon Mechanical Turk. Respondents were randomly assigned to one of four between-subjects conditions, namely, two brands (Bath and Body Works, Sephora) and two types of coupons (regular, shareable).¹⁴ For ease of explication, we combine the data of the two brands, and refer to the remaining two between-subjects conditions as follows: control (regular-coupon) group and treatment (shareable-coupon) group. The two groups are the same as the two groups included in the two randomized field experiments. At the beginning of the study, we asked respondents about their intention to visit the store or website of the retailer on a scale of 1 (least likely) to 7 (most likely). In the control group, participants were told that the retailer was offering a price discount coupon that could be applied towards the purchase of any products that the retailer offered, and would expire in the next two weeks. They were then asked to rate their likelihood (on a 10-point scale) of redeeming the coupon within the campaign period. In the treatment group, similar to the

¹⁴ We conducted a pilot study with about 50 respondents at Amazon Mechanical Turk to understand their liking for several brands. The results indicated that there was heterogeneity in the liking for Bath and Body Works and Sephora as compared to other brands.

control group, participants were given a description of the communication, which they could also share with friends, family or other people. They were then asked for their likelihood of redeeming and sharing the offer (on a 10-point scale) within the campaign period. The order of the two questions on purchasing and sharing were randomized across participants. Finally, they were asked to rate their similarity of brand preferences to their friends' (on a 10-point scale).

Our results show that the redemption likelihood in the regular-coupon group is 5.86, and that in the shareable-coupon group is 4.77 ($p = 0.023$). The pattern of results replicates the findings in the field experiments. Moreover, to examine whether the redemption of coupons is moderated by customer loyalty, we define high-loyalty customers as those who rated their intention to visit the store or website of the retailer in the top two boxes (6 and above) while low-loyalty customers are the ones who rated it at 5 and below. We find that there is no difference for the high-loyalty customers between the regular-coupon and the shareable-coupon group (8.82 and 8.90, respectively, p -value = 0.888), while there is a difference for the low-loyalty customers between the two groups (5.16 and 4.24, respectively, p -value = 0.059). This analysis of heterogeneity in the treatment effect replicates the pattern of results shown in the two field tests.

We computed the similarity in brand preferences between respondents and their friends. The average similarity is 6.66 (std. dev. = 3.01), which is quite high. Upon breaking into down by customer loyalty, we find that the average similarity is high for both high-loyalty customers (7.36) and low-loyalty customers (6.33). This result supports our assumption of homophily in preferences for both high- and low-loyalty customers. Put differently, both types of customers are similar to their friends—high-loyalty customers know other high-loyalty customers, and low-loyalty customers know other low-loyalty customers.

In sum, our proposed mechanism of social priming can explain the pattern of the results across all three studies with and without actual sharing of the offer.

6. Conclusion

Firms frequently attempt to increase customer purchase and loyalty with promotions. With the advent of new technology, it has become easier for firms to communicate with their customers and for customers to communicate with each other. To leverage connections among customers, firms have increasingly offered shareable coupons, which provide benefits to customers that a firm directly communicates with (i.e., primary recipients) but also to other customers who may receive these coupons to redeem from primary recipients (i.e., secondary recipients).

To our best knowledge, this paper represents the first causal test of whether firms benefit from marketing campaigns that feature shareability. Using data from two large-scale field experiments in which customers were randomly exposed to either shareable or regular (i.e., non-shareable) coupons, we investigate customer response when they are allowed to share. On the one hand, there is good news. An aggregate-level analysis of the shareable-coupon group shows that the number of the coupons shared has a positive impact on revenues generated, which is consistent with past work. On the other hand, shareable coupons are less effective than regular coupons in generating revenues among primary recipients. An analysis of heterogeneity in the treatment effect uncovers a more nuanced relationship between redemption and sharing behavior. High-loyalty customers, when exposed to shareable coupons, redeem similarly to those exposed to regular coupons, and share with friends leading to incremental revenue for the firm. In sharp contrast, low-loyalty customers, when exposed to shareable coupons, redeem far less than those exposed to regular coupons, and have limited sharing. These results suggest that

marketing campaigns embedded with shareability features should be targeted to high-loyal customers as it gives them the opportunity to be brand ambassadors. Our results are robust regardless of whether the coupon offers price discounts or free samples. We propose an explanation for the phenomenon based on social priming. Data from an experiment using participants on Amazon Mechanical Turk corroborates the proposed mechanism.

Our work adds to the literature on word-of-mouth and its impact on sales (see Godes et al. 2005 for an excellent summary). Consistent with past work, we find that word-of-mouth positively impacts market-level sales. For instance, upon aggregating the data in the main study at a daily level, the relationship between the number of occasions in which coupons were shared in the shareable-coupon group and revenues is positive (without differentiating among revenues from primary or secondary recipients). This aggregate result is consistent with past findings despite our evidence of a more complex relationship between shareability and own propensity to redeem for primary recipients. Thus, our research can serve as a base for future work that seeks to uncover more insights by considering the relationship between word-of-mouth and sales at a granular level.

Our research complements extant work on price discount coupons and temporary price reductions (e.g., Kumar and Pereira 1995, Leone and Srinivasan 1996, Ailawadi, Lehmann, and Neslin 2001) and the effects of free sample promotions (e.g., Lammers 1991, Gedenk and Neslin 1999, Bawa and Shoemaker 2004). We take one step further and investigate how shareable coupons impact redemption behavior of customers. Our research also complements the emerging literature on the impact of referrals on firm profits. Schmitt, Skiera, and Van den Bulte (2011) have documented that referred customers may have higher profitability for a service firm with recurring transactions. Our focus, in contrast, is on the impact of referral requests on the behavior

of potential referrers themselves in a one-shot setting. In addition, our work adds to the growing body of literature studying the effect of mobile promotions (e.g., Danaher et al. 2015, Luo et al. 2014, Fang et al. 2015, Fong, Fang, and Luo 2015).

There are a number of directions in which our research can be extended. First, our research was undertaken in a one-shot setting in which customers were exposed to campaign communications. In this empirical setting, we find the short-term impact of shareable coupons during the campaign period. It will be useful to examine whether such campaigns have longer-term impact on customer behavior and firm revenues (e.g., Kumar and Pereira 1995, Leone and Srinivasan 1996, Ailawadi, Lehmann, and Neslin 2001), similar to post acquisition benefit of referral programs documented by Schmitt, Skiera, and Van den Bulte (2011).

Second, in our studies, primary recipients could share the coupon with any number of others. As Figure 1 shows, some companies (e.g., Jo-Ann) allow customers to share with only one other customer while other companies (e.g., Wynn Casino) set the limit at a maximum of five. Prior research suggests that audience size can change what people share (e.g., Barasch and Berger 2014). It will be interesting to investigate how the impact of shareable coupons varies by audience size that the firm allows customers to share the coupon with. For instance, it is possible that limiting the audience size forces primary recipients to think carefully about which friends are appropriate for the coupon. Such introspection, in turn, may lead to high-value secondary recipients on average as compared to our current context in which primary recipients could share with as many friends as they wished.

Third, we considered shareable coupons that offered no additional monetary benefits to primary recipients for sharing and/or for purchases made by secondary recipients. In the context of referral programs, there is work that suggests that whether referral rewards change the

likelihood of referral depends on the nature of the tie between referrer and referee (e.g., Ryu and Feick 2007). In particular, referral rewards may not be needed when there is a strong tie between referrer and referee whereas rewards are useful when there is a weak tie. Other work suggests that extrinsic rewards may lower people's interest in what are intrinsically motivated activities (i.e., sharing the coupon so that more people benefit). Please see Lepper and Green (1978) and Frey and Jegen (2001) for a discussion of the crowding-out effect. While shareable coupons in practice do not have monetary rewards associated with them, it will be useful to assess how such incentives may impact their performance. For instance, monetary incentives may change the number of primary recipients who are interested in sharing, but more interestingly, may also impact whom the coupon is shared with.

Fourth, we only varied whether or not the coupon was shareable. While the shareability feature of the coupons may suggest that it is not exclusive, some retailers are using shareable coupons but signaling the exclusivity of the offer as well. For instance, Coach sends its customers shareable coupons but indicates that they have received the offer as they are among the most loyal customers (see Figure 4). How would the provision of customer information and value change the redemption and sharing of the offer? In a similar vein, it will be interesting to test if different framing of customer value can moderate customer engagement (e.g., notifying customers that they are loyal to the firm versus signaling they are in the 10% of customer value). Finally, it will also be useful to test how other ways of manipulating exclusivity of the offer can change the redemption of the coupons, e.g., limiting the campaign period or the number of coupons that can be redeemed (e.g., Frenzen and Nakamoto 1993).

Insert Figure 4 about here

We hope that our paper encourages additional work in these and related areas.

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Table 1: Pre-campaign Descriptive Statistics of the Main Study

	Regular Coupon	Sharable Coupon
Days since most recent purchase		
Mean	40.42	40.56
p10	5.00	5.00
p25	12.00	12.00
p50	28.00	28.00
p75	49.00	49.00
p90	99.00	98.00
Number of products purchased		
Mean	38.23	38.41
p10	14.00	14.00
p25	19.00	19.00
p50	29.00	30.00
p75	48.00	49.00
p90	73.00	74.00
Number of purchases		
Mean	11.20	11.07
p10	6.00	6.00
p25	7.00	7.00
p50	10.00	10.00
p75	14.00	14.00
p90	19.00	18.00
Average amount (\$)		
Mean	33.30	33.58
p10	15.74	16.07
p25	20.32	20.50
p50	27.60	27.88
p75	39.39	40.06
p90	56.20	57.06
Observations	4252	4291

Average amount is the individual average purchase amount based on pre-campaign behavior.

Table 2: Redemption Behavior by Customer Characteristics

	N	Probability of Redemption (%)			Purchase Amount (\$)		
		Regular Coupon	Shareable Coupon	Diff.	Regular Coupon	Shareable Coupon	Diff.
All customers	8543	9.05	7.22	1.83	30.16	32.43	-2.27
By Recency							
< 28	4263	10.89	9.08	1.81	30.29	34.19	-3.90
≥ 28	4280	7.18	5.42	1.76	29.96	29.58	0.38
By Frequency							
> 10	3686	11.99	11.13	0.86	31.59	34.22	-2.63
≤ 10	4857	6.83	4.26	2.57	28.25	28.90	-0.65
By Monetary value							
> \$267	4269	10.78	9.70	1.08	34.30	36.04	-1.74
≤ \$267	4274	7.33	4.75	2.58	24.09	25.08	-0.99

The cut-off point in each RFM measure was selected as the closest integer value to the median split. All measures for segmenting customers are based on pre-campaign behavior.

Table 3: Heterogeneous Effects of Shareable Coupons on Redemption Behavior

	Main Effect	RFM Controls	Recency Interaction	Frequency Interaction	Monetary Interaction	All Interactions	RFM Factor (Loyalty)
Shareable coupon dummy	-.246*** (.080)	-.237*** (.081)	-.247*** (.086)	-.282*** (.084)	-.223*** (.081)	-.235*** (.093)	-.297*** (.085)
Recency		-.006*** (.001)	-.006*** (.002)	-.006*** (.001)	-.006*** (.001)	-.007*** (.002)	
Frequency		.048*** (.007)	.048*** (.007)	.039*** (.009)	.048*** (.007)	.044*** (.010)	
Monetary value		.097 (.077)	.097 (.077)	.093 (.077)	-.011 (.093)	.012 (.104)	
RFM factor (loyalty)							.446*** (.056)
Shareable coupon dummy × Recency			-.001 (.003)			.001 (.003)	
Shareable coupon dummy × Frequency				0.021* (.011)		.011 (.015)	
Shareable coupon dummy × Monetary value					0.238** (.115)	.183 (.155)	
Shareable coupon dummy × RFM factor (loyalty)							.173*** (.086)
Constant	-2.307*** (.053)	-2.386*** (.059)	-2.381*** (.060)	-2.368*** (.060)	-2.396*** (.060)	-2.391*** (.063)	-2.387*** (.056)
Observations	8543	8543	8543	8543	8543	8543	8543
Log-likelihood	-2424	-2324	-2324	-2323	-2322	-2322	-2330
AIC	4661	4659	4661	4657	4657	4660	4668

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors appear in parentheses. Results are from a logit model with redemption incidence as dependent variable. The variables recency, frequency, and monetary value (with logarithm transformation) have been mean-centered.

Table 4: Parameter Estimates of Sharing Behavior

	RFM Controls	RFM Factor (Loyalty)
Recency	-.003* (.002)	
Frequency	.044*** (.011)	
Monetary value	.167 (.107)	
RFM factor (loyalty)		.420*** (.055)
Constant	-2.460*** (.058)	-3.187*** (.057)
Observations	4291	4291
Log-likelihood	-1203	-1463
AIC	2415	2930

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors appear in parentheses. Results are from a logit model with sharing incidence as dependent variable. The variables recency, frequency, and monetary value (with logarithm transformation) have been mean-centered.

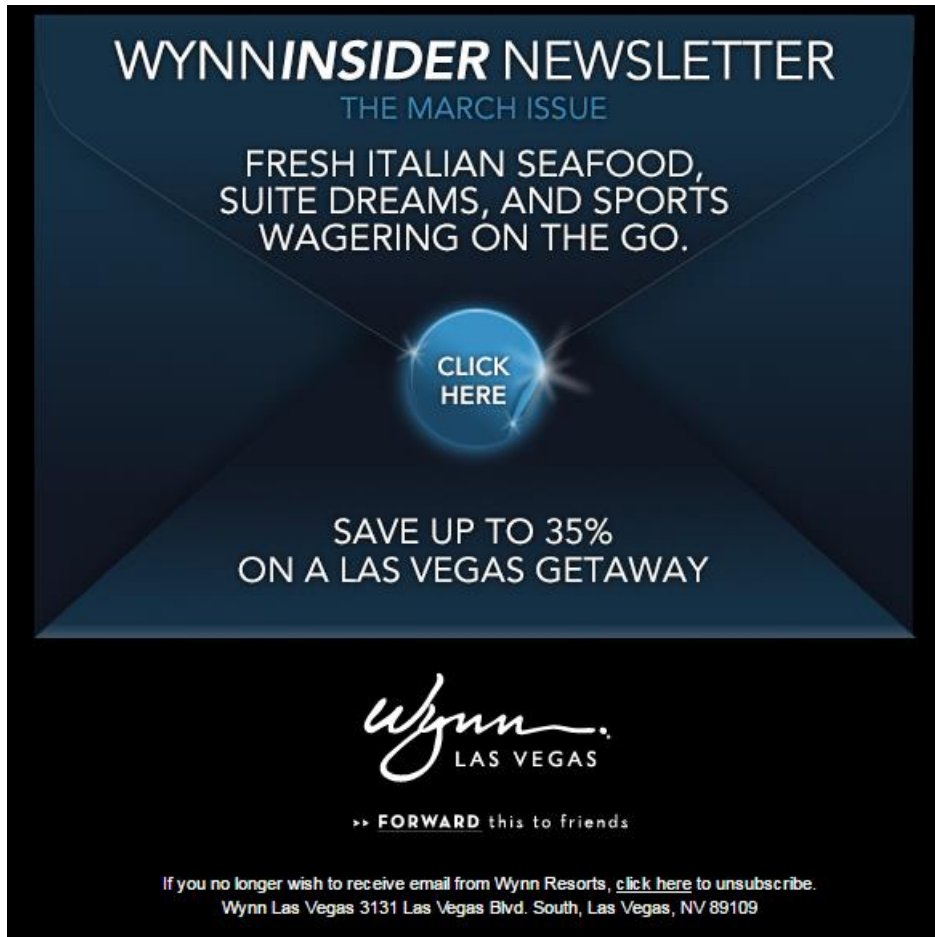
Table 5: Impact of Shareable Coupons by Customer Loyalty

	Low Loyalty		High Loyalty	
	Regular Coupon	Shareable Coupon	Regular Coupon	Shareable Coupon
Number of customers	2417	2440	1835	1851
Percent of primary recipients redeeming	6.83	4.26	11.99	11.13
Conditional purchase amount (\$)	28.25	28.90	31.59	34.22
Average self-value (\$)	1.93	1.23	3.79	3.81
Average total value (\$)	1.93	1.45	3.79	4.42

The cut-off point in the frequency measure was selected as the closest integer value to the median split. The frequency measure for segmenting customers is based on pre-campaign behavior.

Figure 1: Examples of Shareable Promotions

Figure 1a: Wynn Casino



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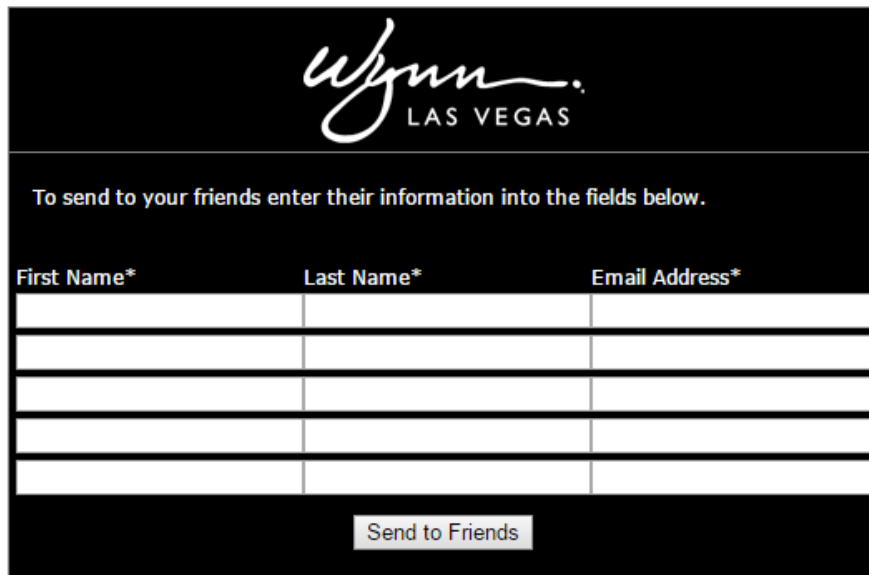
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Figure 1b: Jo-Ann



Figure 2: General Procedure of the Main Study

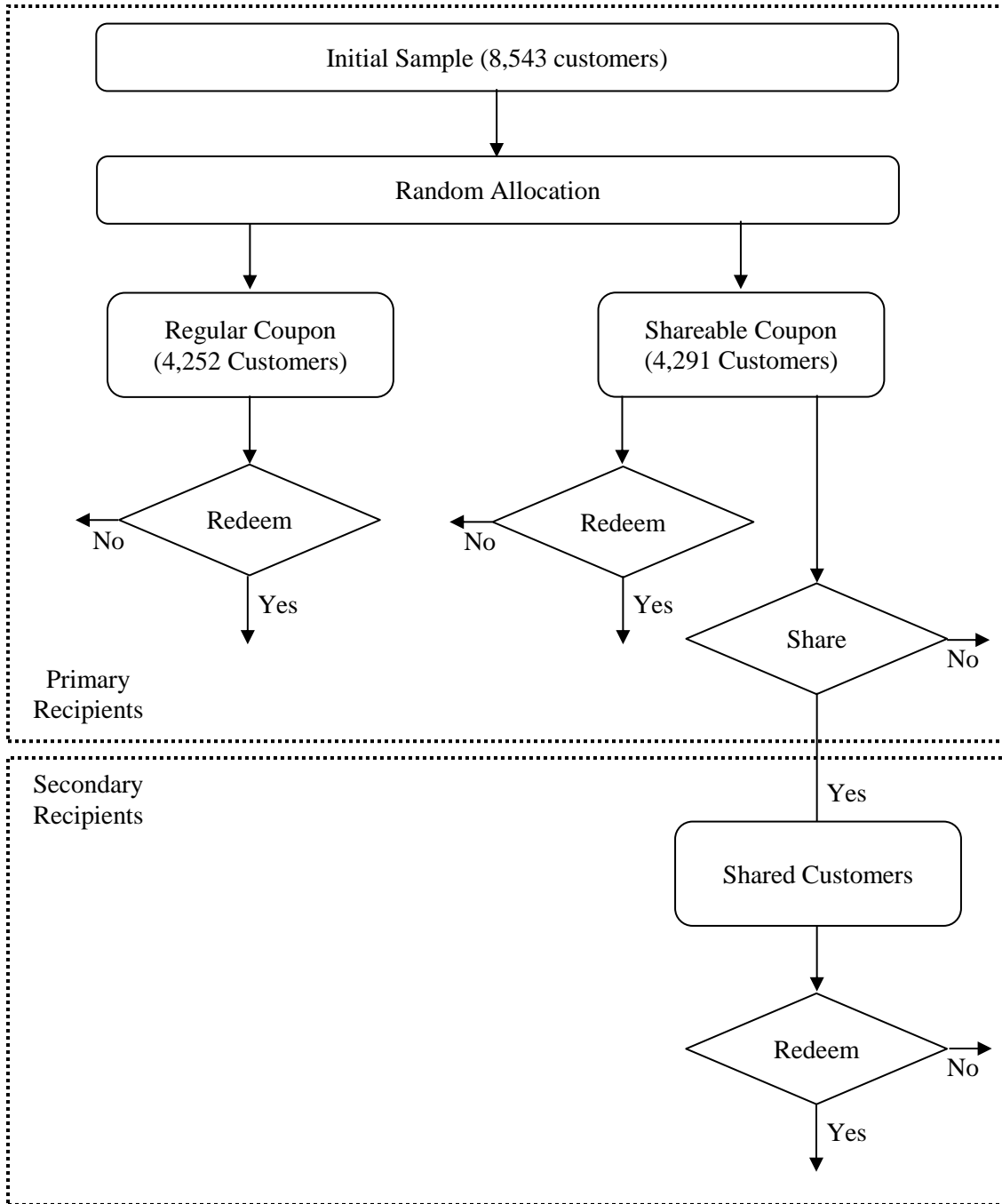


Figure 3: Comparison of Redemption for Regular versus Shareable Coupons

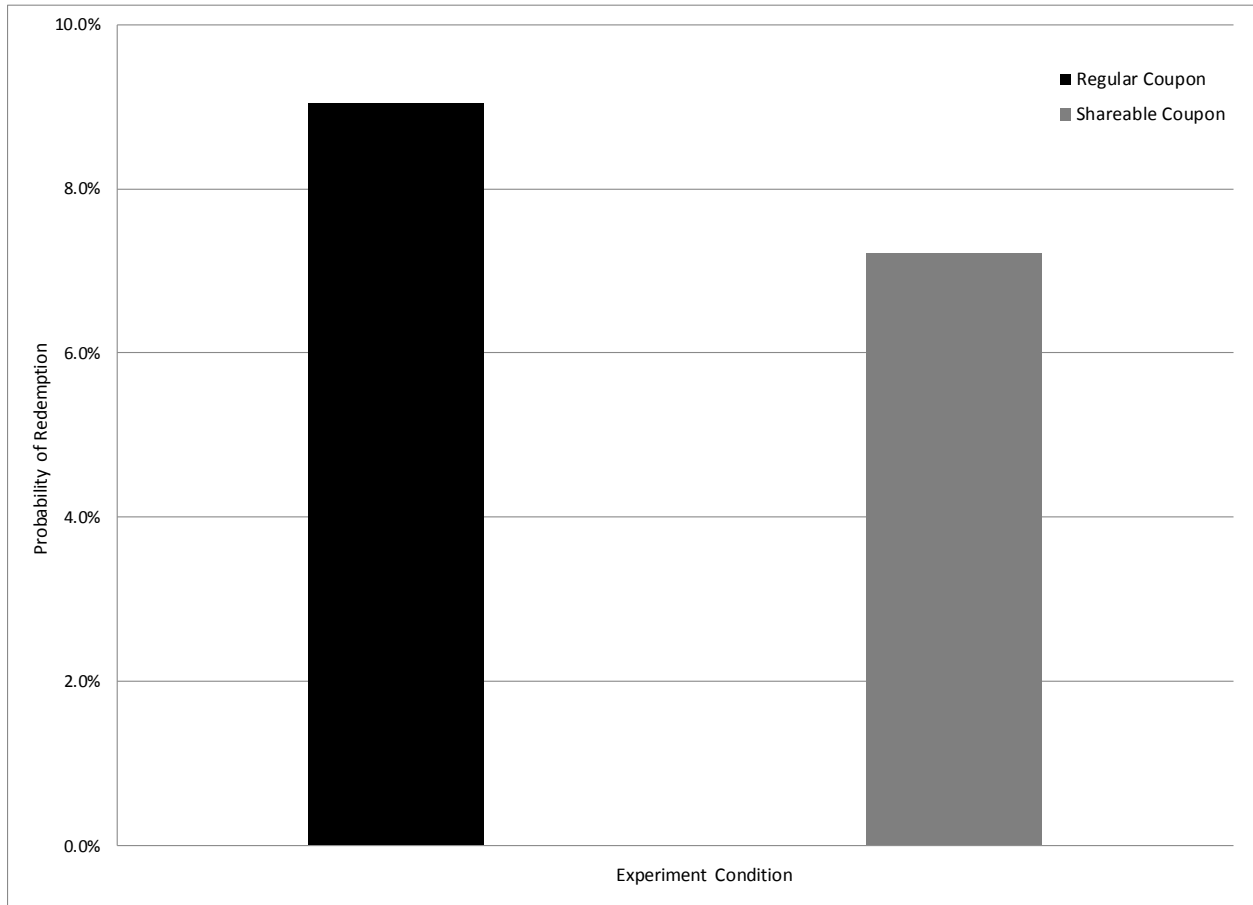


Figure 4: Example of Shareable Promotions with Exclusivity



Appendix

In Appendix, we present the pre-campaign descriptives of experiment 2 which we discussed in section 4. Table A summarizes the individual-level data in the randomized field experiment with two different types of coupons (regular and shareable) which customers could receive a set of free samples if they purchased any of the featured products in the communication. As shown in Table A, the evidence provides further support that there is no systematic variation in the campaign communication.

Table A: Pre-campaign Descriptive Statistics of Experiment 2

	Regular Coupon	Sharable Coupon
Days since most recent purchase		
Mean	114.89	115.27
p10	22.00	22.00
p25	41.00	41.00
p50	86.00	85.00
p75	161.00	161.00
p90	280.00	280.00
Number of products purchased		
Mean	6.67	6.64
p10	1.00	1.00
p25	2.00	2.00
p50	4.00	4.00
p75	8.00	8.00
p90	15.00	14.00
Number of purchases		
Mean	2.61	2.58
p10	1.00	1.00
p25	1.00	1.00
p50	2.00	2.00
p75	3.00	3.00
p90	5.00	5.00
Average amount (\$)		
Mean	155.14	155.39
p10	45.00	45.00
p25	75.00	75.00
p50	132.33	131.67
p75	190.00	190.00
p90	275.00	276.00
Observations	14467	33708

Average amount is the individual average purchase amount based on pre-campaign behavior.