Philipp Schmitt, Bernd Skiera, & Christophe Van den Bulte

Referral Programs and Customer Value

Referral programs have become a popular way to acquire customers. Yet there is no evidence to date that customers acquired through such programs are more valuable than other customers. The authors address this gap and investigate the extent to which referred customers are more profitable and more loyal. Tracking approximately 10,000 customers of a leading German bank for almost three years, the authors find that referred customers (1) have a higher contribution margin, though this difference erodes over time; (2) have a higher retention rate, and this difference persists over time; and (3) are more valuable in both the short and the long run. The average value of a referred customer is at least 16% higher than that of a nonreferred customer with similar demographics and time of acquisition. However, the size of the value differential varies across customer segments; therefore, firms should use a selective approach for their referral programs.

Keywords: customer referral programs, customer loyalty, customer value, customer management, word of mouth, social networks

Word of mouth (WOM) has reemerged as an important marketing phenomenon, and its use as a customer acquisition method has begun to attract renewed interest (e.g., Godes and Mayzlin 2009; Iyengar, Van den Bulte, and Valente 2011). Traditionally, WOM's appeal has been in the belief that it is cheaper than other acquisition methods. A few recent studies have documented that customers acquired through WOM also tend to churn less than customers acquired through traditional channels and that they tend to bring in additional customers through their own WOM (Choi 2009; Trusov, Bucklin, and Pauwels 2009; Villanueva, Yoo, and Hanssens 2008). Villanueva, Yoo, and Hanssens (2008) further suggest that customers acquired through WOM can generate more revenue for the firm than customers acquired through traditional marketing efforts.

From a managerial point of view, these findings are encouraging and suggest purposely stimulating WOM to acquire more customers. However, there are concerns that firm-stimulated WOM may be substantially less effective than organic WOM in generating valuable customers (Trusov, Bucklin, and Pauwels 2009; Van den Bulte 2010) because (1) targeted prospects may be suspicious of stimulated WOM efforts; (2) such efforts often involve a monetary reward for the referrer, who, as a result, may seem less trustworthy; (3) programs providing economic benefits tend not to be sustainable (Lewis 2006); (4) unlike organic WOM, stimulated WOM is not free, raising questions about cost effectiveness; and (5) stimulated WOM is prone to abuse by opportunistic referrers.

The uncertainty about the benefits of stimulated WOM in customer acquisition is frustrating for managers facing demands to increase their marketing return on investment and considering whether to use this method. Our study addresses this managerial issue by investigating the value of customers acquired through stimulated WOM and comparing it with the value of customers acquired through other methods. We do so in the context of a specific WOM marketing practice that is gaining prominence, namely, referral programs in which the firm rewards existing customers for bringing in new customers. Although these programs are typically viewed as an attractive way to acquire customers, their benefits are often viewed to be their targetability and cost effectiveness (Mummert 2000). We broaden this view by assessing the value of customers acquired through these types of programs.

Specifically, we answer four questions: (1) Are customers acquired through a referral program more valuable than other customers? (2) Is the difference in customer value large enough to cover the costs of such stimulated WOM customer acquisition efforts? (3) Are customers acquired through a referral program more valuable because they generate higher margins, exhibit higher retention, or both? and (4) Do differences in margins and retention remain stable, or do they erode? The answers to the last two questions provide deeper insight into what might be driving the value differential.

We answer these four questions using panel data on all 5181 customers that a leading German bank acquired

Philipp Schmitt is a doctoral student (e-mail: pschmitt@wiwi.uni-frankfurt.de), and Bernd Skiera is Professor of Marketing and Member of the Board of the E-Finance Lab at the House of Finance (e-mail: skiera@skiera.de), School of Business and Economics, Goethe University Frankfurt. Christophe Van den Bulte is Associate Professor of Marketing, the Wharton School, University of Pennsylvania (e-mail: vdbulte@wharton.upenn.edu). The authors thank the management of a company that wants to remain anonymous for making the data available and Christian Barrot, Jonah Berger, Xavier Drèze, Peter Fader, Jeanette Heiligenthal, Gary Lilien, Renana Peres, Jochen Reiner, Christian Schulze, Russell Winer, Ezra Zuckerman, and the anonymous *JM* reviewers for providing comments on previous drafts of this article.

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through its referral program (referred customers) between January 2006 and December 2006 and a random sample of 4633 customers the same bank acquired through other methods (nonreferred customers) over the same period. For both groups of customers, we track profitability (measured as contribution margin) and loyalty (measured as retention) at the individual level from the date of acquisition until September 2008. The total observation period spans 33 months. We use two metrics of customer value: (1) the present value of the actually observed contribution margins realized within the data window and (2) the expected present value over a period of six years from the day of acquisition. Although our study is limited to a single research site, as is common for studies that require rich and confidential data, the methodology and findings are of broad interest. Customer referral programs are gaining popularity in many industries, including financial services, hotels, automobiles, newspapers, and contact lenses (Ryu and Feick 2007).

We make the following contributions: First, we provide empirical evidence that a referral program, a form of stimulated WOM, is an attractive way to acquire customers. Referred customers exhibit higher contribution margins, retention, and customer value. Second, building on our finding that differences in contribution margin erode over time whereas those in retention do not, we document that referred customers are more valuable in both the short and the long run. Third, we show that the referral effect need not be present in every customer segment. Finally, we illustrate how the type of analysis we conduct enables firms to calculate the return on investment and the upper bound for the reward in their customer referral programs.

We proceed by describing referral programs and developing our hypotheses. A description of the research setting, the data, and the model specifications follows. Then, we report the results. Finally, we discuss implications for practice, the limitations, and opportunities for further research.

Customer Referral Programs

Customer referral programs are a form of stimulated WOM that provides incentives to existing customers to bring in new customers. An important requirement for such programs is that individual purchase or service histories are available so the firm can ascertain whether a referred customer is indeed a new rather than an existing or a former customer.

Referral programs have three distinctive characteristics. First, they are deliberately initiated, actively managed, and continuously controlled by the firm, which is impossible or very difficult with organic WOM activities such as spontaneous customer conversations and blogs. Second, the key idea is to use the social connections of existing customers with noncustomers to convert the latter. Third, to make this conversion happen, the firm offers the existing customer a reward for bringing in new customers.

Although leveraging the social ties of customers with noncustomers to acquire the latter is not unique to customer referral programs, the three distinctive characteristics of these programs set them apart from other forms of network-based marketing (Van den Bulte and Wuyts 2007). Unlike organic WOM, the firm actively manages and monitors referral programs. Unlike most forms of buzz and viral marketing, the source of social influence is limited to existing customers rather than anyone who knows about the brand or event. Unlike multilevel marketing, existing customers are rewarded only for bringing in new customers. They do not perform any other sales function (e.g., hosting parties) and do not generate any income as a function of subsequent sales. Consequently, referral programs do not carry the stigma of exploiting social ties for mercantile purposes, as multilevel marketing does (Biggart 1989).

In most referral programs, the reward is given regardless of how long the new referred customers stay with the firm. Such programs are prone to abuse by customers. Although the firm does not commit to accept every referral, the incentive structure combined with imperfect screening by the firm creates the potential for abuse in which existing customers are rewarded for referring low-quality customers. This kind of moral hazard is less likely to occur with WOM campaigns that do not involve monetary rewards conditional on customer recruitment.

Existing studies of customer referral programs have provided guidance about when rewards should be offered (Biyalogorsky, Gerstner, and Libai 2001; Kornish and Li 2010), have quantified the impact of rewards and tie strength on referral likelihood (Ryu and Feick 2007; Wirtz and Chew 2002), and have quantified the monetary value of making a referral (Helm 2003; Kumar, Petersen, and Leone 2007, 2010). The key managerial question of the (differential) value of customers acquired through referral programs has not yet been addressed.

Hypotheses

Because referral programs are a customer acquisition method, an important metric to assess their effectiveness is the value of the customers they acquire. Additional insights come from investigating differences between referred and nonreferred customers in contribution margins and retention rates, the two main components of customer value (e.g., Gupta and Zeithaml 2006; Wiesel, Skiera, and Villanueva 2008).

Our hypotheses regarding these customer metrics of managerial interest are informed by prior work in economics and sociology on employee referral (e.g., Coverdill 1998; Rees 1966), especially the work of Fernandez, Castilla, and Moore (2000), Neckerman and Fernandez (2003), and Castilla (2005) on the quality of employee referral programs. These studies show that the benefits of such programs are realized through distinct mechanisms, of which better matching and social enrichment appear particularly relevant to marketers. Better matching is the phenomenon that referrals fit with the firm better than nonreferrals, and social enrichment is the phenomenon that the relationship of the referral to the firm is enriched by the presence of a common third party (i.e., the referrer).

Customer and employees referral programs are likely to be subject to similar mechanisms because they share the three distinctive characteristics of having active management, using the social connections of existing contacts, and

offering rewards with the risk of abuse. Selecting a new employer or bank both are high-involvement decisions involving a fair amount of uncertainty. Although some basic banking products, such as checking accounts, are well known to most customers, the wider set of financial services that banks provide are considered experience goods rather than search goods (e.g., Bolton, Freixas, and Shapiro 2007; Parasuraman, Zeithaml, and Berry 1985). The recurrent losses of many private investors indicate that many people are not very skilled at assessing complex bank offerings.

We use the better matching and social enrichment mechanisms to develop and motivate our hypotheses. However, our goal is to document managerially relevant differences in contribution margin, retention, and customer value rather than to test those specific mechanisms. The mechanisms are only possible explanations for the differences we document.

Differences in Contribution Margin

Several characteristics of social dynamics in human networks (e.g., Van den Bulte and Wuyts 2007) imply that referred customers may match up with the firm better than other newly acquired customers. The first is reciprocity. Because referring customers receive a reward, norms of reciprocity may make nonopportunistic customers feel obliged to bring in new customers who they think may be valuable to the firm (Gouldner 1960). This process explains Neckerman and Fernandez's (2003) finding that referrals for which the referrer claimed a fee had lower turnover than referrals for which no fee was claimed. The second social dynamic likely to be at work is triadic balance. If the main function of the program is simply to nudge customers into making referrals without much consideration for the monetary reward (Thaler and Sunstein 2008), principles of triadic balance will make existing customers more likely to bring in others who they believe would match well with what the firm has to offer. A third social dynamic likely to be at work is homophily—the tendency for people to interact with people like them. Whereas reciprocity and triadic balance imply that referrers are diligent and active in screening and matching peers to firms, homophily implies that customers are likely to refer others who are similar to themselves. Because existing customers have an above-average chance of being a good match (otherwise, they would not be customers), firms may benefit from referral programs through "passive" homophily-based matching rather than only deliberate "active" screening-based matching by referrers (Kornish and Li 2010; Montgomery 1991; Rees 1966).

Acquisition through referral can also result in informational advantages, making referred customers more profitable than other customers. Referred customers are likely to have discussed the firm's offerings with their referrer. As a result, they are likely to use its products more extensively than novice customers who take a more cautious approach in building involvement. Informational advantages to the firm can also result if people refer others similar to themselves on dimensions that are relevant to the enjoyment of the product or service but are not immediately observable to the firm (Kornish and Li 2010). Examples for financial services include risk aversion and a sense of fiscal responsibility. In these situations, the firm can make inferences from the observed behavior of the referrers about the products in which the referred customers will be most interested (e.g., Guseva 2008). As a result, the firm is able to serve the referred customer in a tailored way early on, something that takes time to learn for other newly acquired customers. Because of this informational advantage, the firm should be able to generate a higher contribution margin from referred customers at the beginning of the relationship.

However, the advantages of better matching and better information should gradually vanish. As nonreferred customers accumulate experience with the firm, they should become equally well informed about the firm's offerings and procedures. Likewise, the firm should be able to use the purchase and service history of the nonreferred customers to serve them better. Furthermore, nonreferred customers who are not a good match for the firm are more likely to leave. Consequently, both revenues and costs of referred and nonreferred customer should converge, eliminating the difference in contribution margin over time. Thus:

> H_1: (a) The average contribution margin of a customer acquired through a referral program is higher than that of a customer acquired through other methods, but (b) this difference becomes smaller over time.

Differences in Retention

Social enrichment is another mechanism that may increase the value of referred customers. The argument is that the relationship with the firm is enriched because a family member or friend is a customer of the same firm (Castilla 2005; Fernandez, Castilla, and Moore 2000). Having a person close to oneself in a similar position (i.e., being a customer of the same firm) should increase the person's trust in the firm and strengthen his or her emotional bond with it, as both balance theory and social closure theory predict (Van den Bulte and Wuyts 2007). This prediction is also consistent with findings that customers reflecting on their affect toward a firm mention friends who are customers with the same firm (Yim, Tse, and Chan 2008). Such relationships should be particularly relevant in a banking context, in which emotions and trust play important roles in the customer–firm relationship (e.g., Edwards and Day 2005; Fleming, Coffman, and Harter 2005). In short, referred customers are likely to have a stronger sense of commitment and attachment to the firm. This implies that referred customers are less likely to churn than nonreferred customers, provided that their referrer does not churn either. The latter condition is likely to hold: Referrers typically have a greater long-term likelihood of staying, which is why intention to refer is frequently used as an indicator of loyalty (Gupta and Zeithaml 2006).

Although the informational advantage of a referred customer decreases over time as direct experience substitutes for social learning, there is no reason to expect erosion in the affective bonding underlying the social enrichment mechanism. Consequently, the erosion of the differential expected in contribution margin need not apply to retention. Therefore, we state the following:

H_2: (a) The average retention of a customer acquired through a referral program is higher than that of a customer acquired through other methods, and (b) this difference does not become smaller over time.

Differences in Customer Value

If H_1 and H_2 hold *and* if the erosion of contribution margins does not outweigh the initial difference in margins and the persisting difference in retention, the following should hold as well:

H_3: The average value of a customer acquired through a referral program is higher than that of a customer acquired through other methods.

H_3 can hold even when H_1 and H_2 do not, because it is possible for the differences in both margins and retention to be small but for their combined effect to be sizable and significant. Another reason to test H_3 on customer value, in addition to H_1 and H_2 on margins and retention, is that customer value is what managers should care about most.

Although we base our prediction on sound theoretical arguments, the posited effects are not as obvious as they may seem because there are several competing forces at work. First, the prospect of earning a referral fee may induce referrers to pressure their peers to become customers without giving much consideration to whether the firm actually matches their peers' needs. Second, the relationship between the referred customer and his or her referrer, which is necessary for social enrichment to operate, comes with an inherent risk: When referrers defect, the customers they brought in may become more likely to leave as well. Although it seems unlikely that referrers as a whole are more prone to churn than the average customer, the risk of contagious defection should not be ignored altogether. Third, an abuse of the referral program by customers who are interested only in the monetary reward is probably the most important reason for practitioners' skepticism. This is illustrated by TiVo's termination of its referral program as a result of frequent abuses (ZatzNotFunny 2008).

Support for our hypotheses would allow us to conclude that the positive effects outweigh the negative ones. In addition, the empirical analysis provides not only a test of the hypotheses but also an estimate of the size of the customer value differential. Firms can use the latter to put a maximum value on the reward to be paid out as part of their referral program.

Methods

Research Setting

We use data from a leading German bank, whose name we do not divulge for confidentiality reasons. The data capture all customers acquired through the bank's referral program between January 2006 and December 2006 and a random sample of customers acquired through other methods (e.g., direct mail, advertising) over the same period. The latter group may include customers affected by organic WOM for which the bank did not pay any fee. To the extent that the value of customers acquired through organic WOM is equal to or greater than that of customers acquired through the referral program, our results underestimate the value differential between WOM and non-WOM customers. Regardless, we correctly estimate the value differential between customers acquired through the referral program and all other customers for whom no referral fee was paid.

The observation period spans from January 2006 to September 2008 (33 months), and the data on each individual customer include the day of acquisition, the day of leaving the bank (if applicable), the contribution margin in each year, and some demographics. In total, we have data on 5181 referred and 4633 nonreferred customers. Because the referral program was used only in a business-to-consumer context, all customers are individual people.

The referral program was communicated to existing customers through staff and flyers in the branches and through mailings.[1] The procedure was straightforward: Every existing customer who brought in a new customer received a reward of 25 euros in the form of a voucher that could be used at several well-known German retailers.[2] Except for opening an account, the referred customer did not need to meet any prerequisites (e.g., minimum amount of assets, minimum stay) for the referrer to receive the reward.

In addition, 2006 was not an unusual year in terms of customer acquisition, and the bank's management was confident that findings about customers acquired in 2006 would be applicable to customers acquired in earlier and later years. Proprietary information of the bank shows that its customers are similar to those of other leading European banks. Regarding the usage of its referral program and the response of its customers to it, no differences with other firms are apparent either.

Dependent Variables

Daily contribution margin is the individual contribution margin on a daily basis. It is the total contribution margin the customer generates in the observation period, divided by the total number of days the customer was with the bank (duration). This per diem scaling ensures the comparability of the contribution margin of customers with different observed (and possible censored) durations. The contribution margin equals revenue (interest and fees) less direct costs (e.g., interest expenses, sales commissions, brokerage, trading costs). The acquisition costs are not subtracted from the contribution margin. We also compute a time-varying version of daily contribution margin by dividing the contribution margin generated by the customer in a particular year (2006, 2007, 2008) by the number of days the customer was with the bank in that year.

[1]These mailings went to the referring customers. Mailings to which the nonreferred customers responded were sent directly to them.

[2]Although confidentiality concerns preclude us from reporting the average cost of acquisition for referral and nonreferral customers, we can report that the total acquisition cost for referred customers (including not only the referral fee but also the additional administrative costs of record keeping, paying out, and so on) is on average approximately 20 euros lower than that for nonreferred customers acquired through mailings.

Duration is the total number of days the customer was observed to be with the bank. It is the basis for analyzing retention.

We calculate two measures of customer value, one based only on observed data and the other based on both observed data and predictions. Observed customer value is the present value of all actual contribution margins the customer generated during the whole observation period (e.g., 33 months for retained customers acquired in January 2006). This metric is affected by both contribution margin and retention because a customer generates no margins after leaving the bank. Our second metric, customer lifetime value, is the present value of all contribution margins, both actual and predicted, of the customer within the six-year span following the day of acquisition.[3] For customers who churned during the observation period, customer lifetime value equals observed customer value because their predicted value is 0. The formulas are as follows:

$$(1)\quad \text{Customer Lifetime Value}_i = \text{Observed Customer Value}_i + \text{Predicted Customer Value}_i,$$

$$(2)\quad \text{Observed Customer Value}_i = \sum_{s=1}^{\text{Dur}_i} \frac{\text{OM}_{is}}{(1+r)^{s/12}}, \text{ and}$$

$$(3)\quad \text{Predicted Customer Value}_i = \delta_i \sum_{s=\text{Dur}_i+1}^{72} \frac{\text{PM}_{is} \times \text{PA}_{is}}{(1+r)^{s/12}},$$

where OM_{is} is the observed monthly contribution margin of customer i in the sth month after acquisition (calculated from the observed annual contribution margin and the observed duration), Dur_i is the customer's observed lifetime with the bank in months, δ_i is a dummy censoring variable that indicates whether the customer was still with the bank by the end of the observation period, PM_{is} is the predicted monthly contribution margin of customer i in the sth month after acquisition, PA_{is} is the predicted probability that customer i is still "alive" (i.e., with the bank) in that month, and r is the firm-specific annual discount rate of 11.5%.[4] The present value reflects what the customer is worth at the day of acquisition.

Independent Variables

The independent variable of central interest is referral program, a binary indicator that takes the value 1 for referred customers (i.e., those who were acquired through the referral program) and 0 for nonreferred customers. To improve the comparability of referred and nonreferred customers, we control for the demographic variables age, sex (dummy variable, with women coded as 1 and men coded as 0), and marital status (dummy variables for married, divorced/separated, single, and widowed, with no answer as the base category). We also control for the customer's month of acquisition (11 dummy variables for each month, with December 2006 as the base category).

To assess the robustness of the difference in customer value, we also conduct separate analyses for the two key segments of the bank: retail customers with standard financial needs and nonretail customers with significant assets or requiring more sophisticated financial advice. This segmentation scheme the bank uses is based on a comprehensive analysis of both financial data (e.g., assets invested with the bank, monthly checking account balance) and demographic information (e.g., profession, place of residence). The segments form the basis for all strategic customer-related decisions of the bank.

Descriptive Statistics

The sample includes several customers with an extremely high daily contribution margin that is up to 80 standard deviations above the mean and median. Such extreme data points can influence comparisons of means and regression results, so we purify the data using the standard DFBETA and DFFIT criteria to identify influence points (Belsley, Kuh, and Welsch 1980). This procedure led to the deletion of 172 referred customers (3.3% of the original 5181 referred customers) and 147 nonreferred customers (3.2% of the original 4633 nonreferred customers). As we report in the subsection "Robustness Checks," testing the hypotheses without deleting the influence points results in larger differences and provides stronger support for the hypotheses. Yet the size estimates obtained without the influence points are more informative.

Table 1 presents the means, standard deviations, and the correlation matrix for the purified sample of 9495 customers. As the nonzero correlations between the referral program variable and the various demographic and time of acquisition variables indicate, the groups of referred and nonreferred customers are not perfectly matched on demographics and time of acquisition. Thus, it is desirable to control for these differences.

Figure 1 plots the average daily contribution margin for the referred and nonreferred customers of the purified sample, for 2006, 2007, and 2008. The pattern is encouraging. Referred customers tend to generate higher margins, and the margins tend to erode more quickly among referred customers, such that the margin differential is narrower in 2008 than in 2006 (8 cents versus 18 cents per day). Similarly, as Figure 2 shows, after about a year, the retention rate of referred customers is higher, and this is the case regardless of duration. However, controlling for differences in demographics and time of acquisition is necessary to draw conclusions more confidently.

Statistical Models

To estimate the difference in contribution margin between acquisition modes (H_{1a}), we use a regression model with the following specification:

[3]This way, we do not need to predict margins and retention rates beyond four years after the end of the data window, and the resulting customer lifetime values are unlikely to be overly affected by forecasting error (Kumar and Shah 2009).

[4]We base the discount rate on the capital asset pricing model. We assume a risk-free interest rate of 4.25% (Svensson 1994), a 5% market risk rate based on the Institute of German Accountants, and a firm-specific beta of 1.45 based on Thomson Financial Datastream.

TABLE 1
Descriptive Statistics

	Units	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Referral program	0–1	.53	.50	1.00																					
2. Observed customer value	Euros	210.66	336.15	.02	1.00																				
3. Customer lifetime value	Euros	255.75	338.95	.01	1.00	1.00																			
4. Daily contribution margin	Euros per day	.33	.50	.04	.98	.98	1.00																		
5. Duration	Days	751.05	119.48	–.17	.18	.21	.09	1.00																	
6. Age	Years	42.90	17.47	–.20	.10	.09	.10	–.01	1.00																
7. Female	0–1	.54	.50	.07	.01	.01	.01	.01	.05	1.00															
8. Married	0–1	.39	.49	–.15	–.02	–.03	–.02	–.03	.43	.01	1.00														
9. Single	0–1	.44	.50	.16	–.05	–.04	–.05	.01	–.65	–.10	–.70	1.00													
10. Divorced	0–1	.10	.30	.00	.03	.03	.03	.02	.13	.06	–.26	–.29	1.00												
11. Widowed	0–1	.05	.22	–.05	.11	.11	.10	.03	.36	.14	–.18	–.20	–.07	1.00											
12. Acquired January 2006	0–1	.03	.17	–.17	.07	.08	.03	.31	.02	.00	.01	–.03	–.00	.04	1.00										
13. Acquired February 2006	0–1	.03	.18	–.18	.02	.03	–.01	.27	.05	–.02	.04	–.04	–.00	.01	–.03	1.00									
14. Acquired March 2006	0–1	.06	.24	–.18	.04	.04	.01	.29	.07	–.01	.05	–.04	–.00	.00	–.04	–.05	1.00								
15. Acquired April 2006	0–1	.06	.23	.02	.04	.04	.02	.24	–.01	–.00	–.03	.02	.02	.01	–.04	–.05	–.06	1.00							
16. Acquired May 2006	0–1	.07	.26	.03	.03	.04	.01	.22	–.02	–.01	–.01	.02	–.01	–.02	–.05	–.05	–.07	–.07	1.00						
17. Acquired June 2006	0–1	.08	.28	–.01	.02	.02	.01	.14	.02	.02	–.01	–.01	.00	.04	–.05	–.06	–.08	–.07	–.08	1.00					
18. Acquired July 2006	0–1	.10	.30	.00	.01	.01	.01	.08	.02	–.00	.00	–.02	.03	–.00	–.06	–.06	–.09	–.08	–.09	–.10	1.00				
19. Acquired August 2006	0–1	.11	.31	.06	–.00	–.00	–.00	–.01	–.08	.00	–.06	.05	.02	–.02	–.06	–.06	–.09	–.08	–.09	–.10	–.12	1.00			
20. Acquired September 2006	0–1	.08	.27	.07	.00	.00	.01	–.08	–.06	.01	–.03	.04	–.00	–.02	–.05	–.06	–.08	–.07	–.08	–.09	–.10	–.10	1.00		
21. Acquired October 2006	0–1	.12	.33	.04	–.03	–.04	–.01	–.22	.01	.01	.02	–.00	–.01	–.01	–.07	–.07	–.09	–.09	–.10	–.11	–.13	–.13	–.11	1.00	
22. Acquired November 2006	0–1	.12	.33	.04	–.05	–.06	–.02	–.31	–.00	–.03	.01	–.01	–.01	–.00	–.07	–.07	–.09	–.09	–.10	–.11	–.13	–.13	–.11	–.14	1.00
23. Nonretail customers	0–1	.12	.32	–.03	.27	.27	.27	–.00	.03	.00	.01	–.01	–.03	.00	.02	–.00	.01	.01	–.04	.00	–.01	–.02	–.02	–.03	.00

Notes: N = 9495. All correlations with absolute value of .02 or higher are significant at the 5% level. Differences in observed duration across customers are strongly affected by differences in the month of acquisition. As a result, the zero-order correlations of duration with other variables that are also correlated with month of acquisition can be misleading. For example, the correlation between duration and referral program changes from –.17 to .03 after we control for month of acquisition.

FIGURE 1
Average Values of Daily Contribution Margin for Referred and Nonreferred Customers by Year

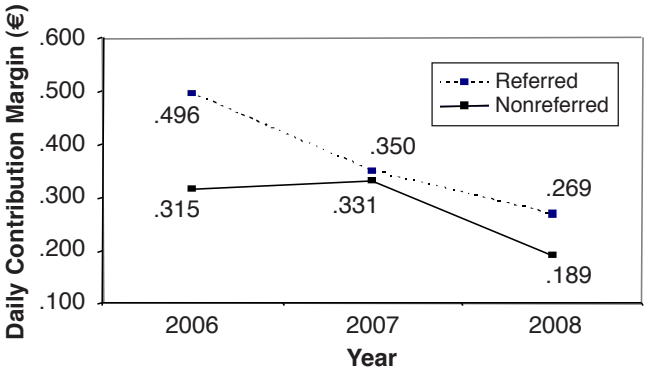
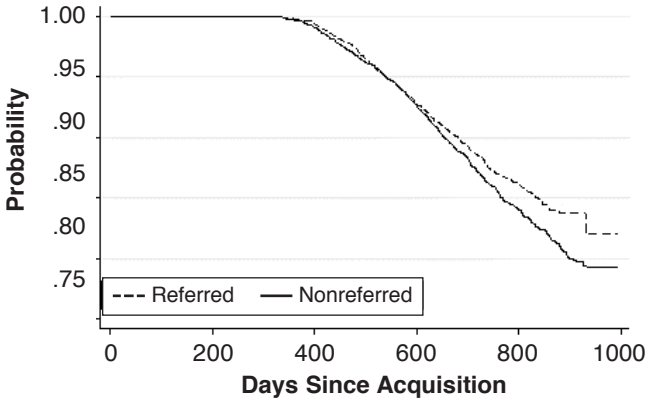


FIGURE 2
Probability That Referred and Nonreferred Customers Have Remained with the Firm (Kaplan–Meier Estimates of Survivor Functions)



Notes: Customers were able to leave immediately after joining, but only a handful did so. The earliest defection took place after 64 days, and only 27 customers left within the first year of joining.

$$(4)\qquad DCM_i = \alpha + \beta_1 RP_i + \sum_{k=2} \beta_k X_{ik} + \varepsilon_i,$$

where i indexes the customer, DCM is daily contribution margin over the observation period, RP is the binary variable representing the referral program, X represents the control variables, and the errors ε_i have a mean of zero and are independent of the included covariates. We use ordinary least squares to estimate the coefficients and compute Huber–White heteroskedasticity-consistent standard errors (Breusch–Pagan test, $p < .001$). The size of our sample implies that we do not need to assume that the random shocks are normally distributed for statistical inference using t- and F-statistics (e.g., Wooldridge 2002, pp. 167–71).

To test whether difference in margin decreases the longer the customer has been with the bank (H_{1b}), we use a fixed-effects specification estimated with ordinary least squares:

$$(5)\qquad DCM_{it} = \alpha_i + \beta_2 T_{it} + \beta_3 RP_i \times T_{it} + \eta_t + \varepsilon_{it},$$

where i indexes the customer; t indexes the year (t = 1, 2, 3); DCM_{it} is the daily contribution margin of customer i in year t (i.e., the total contribution margin generated by customer i in year t divided by the number of days the customer was with the firm during year t); T_{it} is the cumulative number of days customer i had been with the bank by the end of year t; η_t is a year-specific fixed effect; and the customer-specific intercepts α_i are not constrained to follow any specific distribution but capture all individual-specific, time-invariant differences, including the effect of acquisition through the referral program (RP) and that of the control variables X. The errors ε_{it} have a mean of zero and are independent of the covariates. The β_3 coefficient captures the proper interaction effect because the β_1 effect of RP is now captured through the fixed effects. Again, we use the robust Huber–White standard errors (Breusch–Pagan test, $p < .001$).

To assess the difference in retention between acquisition modes, we use the Cox proportional hazard model. This enables us to analyze right-censored duration data and to exploit the fine-grained measurement of churn at the daily level without imposing any restriction on how the average churn rate evolves over time. Furthermore, the nonparametric baseline hazard makes the model robust to unobserved heterogeneity in all but extreme cases (e.g., Meyer 1990). We can represent the model to test H_{2a} as follows:

$$(6)\qquad \ln[h_i(t)] = \alpha(t) + \beta_1 RP_i + \sum_{k=2} \beta_k X_{ik},$$

where i indexes the customer, t indexes the amount of days since the customer joined the bank, $h_i(t)$ is the hazard rate for the customer's defection, and $\alpha(t)$ is the log of the nonparametric baseline hazard common across all customers. To test whether the difference in churn propensity changes over time (H_{2b}), we extend Equation 6 with the interaction between RP_i and ln(t). The latter is also a test of whether the RP effect meets the proportionality assumption (e.g., Blossfeld, Hamerle, and Mayer 1989), but we use it here to test a hypothesis of substantive interest.

To test H_3 and assess the difference in customer value, we again use the regression model in Equation 4, but now with observed customer value as the dependent variable. Theoretical claims can be subjected to empirical validation or refutation only by comparing hypothesized effects with actual data. As a result, the truth content of H_3 can be validly tested using the observed customer value as the dependent variable but not customer lifetime value, which itself is based on predictions. Still, given the right censoring of our data and the hypothesized erosion of the margin differential over time, it is informative also to perform a similar analysis with the six-year customer lifetime value as the dependent variable. To calculate the predicted values entering the customer lifetime value metric, we use (1) predicted annual contribution margins from a fixed-effects model, such as that specified in Equation 5, but one in which we allow all parameters to vary between referred and nonreferred customers, and (2) predicted annual survival rates from a parametric Weibull hazard model because the nonparametric baseline hazard of the Cox model does not allow for forecasts.[5]

Results

Is the Contribution Margin of Referred Customers Higher?

In accordance with H_{1a}, referred customers are, on average, 4.5 cents per day more profitable than other customers (Mann–Whitney test, $p < .001$). The difference is even larger after we control for differences in customer demographics and time of acquisition, variables on which the two groups of customers are not perfectly matched. The first column of Table 2 reports the coefficients of Equation 4, controlling for age, sex, marital status, and month of acquisition. Whereas the average contribution margin of nonreferred customers in our sample is 30 cents per day, customers acquired through the referral program have a margin that is 7.6 cents per day or 27.74 euros per year higher ($p < .001$), an increase of approximately 25%. Among the covariates, older age and being widowed are associated with a higher contribution margin, whereas being married is associated with a lower contribution margin. The pattern in the monthly coefficients suggests that the bank was more successful in acquiring profitable customers in some months than in others. The R-square is low, indicating that important elements other than acquisition method, acquisition time, and demographics drive customer profitability. Although the large unexplained variance depresses the power of statistical tests and thus makes it more difficult to reject the null hypothesis, H_{1a} is strongly supported.

Does the Contribution Margin of Referred Customers Remain Higher?

H_{1b} predicts that the difference in contribution margin erodes the longer a customer stays with the bank. The results support this. Column 2 of Table 2 reports the coefficients of the fixed-effects model in Equation 5. There is a significant, negative interaction between referral program and the number of days the customer has been with the bank. The difference in daily contribution margin between referred and nonreferred customers decreases by 23.1 cents per 1000 days, or 8.4 cents per year.

The individual-level fixed effects (intercepts) in the model capture the expected daily contribution margin when the included covariates equal zero (i.e., on the day of acquisition in 2006). Regression of these 9495 fixed-effects estimates on the referral program and control variables indicates that a referred customer has an expected contribution margin on the first day of joining the firm that is 19.8 cents higher than that of a nonreferred customer with similar demographics and time of acquisition.[6] This implies that the expected contribution margin advantage of a referred customer disappears after 857 days (.198/.000231), or approximately 29 months after the customer joined the bank.

Is the Retention of Referred Customers Higher?

To test whether the retention rate is higher for referred than for nonreferred customers (H_{2a}), we use the Cox proportional hazard model specified in Equation 6. The results reveal that the association between referral program and churn (i.e., nonretention) is significantly negative and sizable. Use of only referral program as the explanatory variable shows that at any point in time, customers acquired through the referral program who are still with the firm are approximately 13% less likely to defect than nonreferred customers who are still with the firm. After we control for differences in demographics and month of acquisition (see Column 3 of Table 2), the effect size increases to approximately –18% [exp(–.198) – 1]. This multiplicative effect of 18% is relative to a baseline hazard that is small. As the survival curves in Figure 2 show, the probability of being an active customer (i.e., a nonchurning customer) after 33 months is 82.0% for referred customers and 79.2% for nonreferred customers. Age is associated with a higher churn rate, whereas the opposite holds for being widowed. There is also a trend in the monthly coefficients, indicating that customers acquired late in 2006 (especially in September and later) exhibit more churn than those acquired earlier. This trend is a cohort effect and not duration dependence, which is captured in the nonparametric baseline hazard.

Does the Retention of Referred Customers Remain Higher?

We also assess whether the difference in retention varies over the customer's lifetime (H_{2b}). To do so, we extend the Cox model with an interaction between the referral program variable and the natural logarithm of the customer's duration with the bank (see Column 4 of Table 2). The interaction is not significant, and the model fit does not improve significantly ($p > .05$). So, although there is an eroding difference between referred and nonreferred customers in contribution margin, there is no such erosion for customer retention.[7]

Are Referred Customers More Valuable?

Using the observed customer value, we find that, on average, referred customers are 18 euros more valuable (Mann–Whitney test, $p < .001$). After we control for demographics and month of acquisition, the difference increases to 49 euros (Column 5 of Table 2; $p < .001$). A referred cus-

[5]In-sample parameter estimates from the Cox and Weibull models are nearly identical. The reason for using the Cox model in testing the hypotheses is the absence of a restrictive parametric assumption on the duration dependence.

[6]This difference in daily contribution margin of 19.8 cents is close but not identical to the 18 cents difference between the two groups of customers in 2006, shown in Figure 1. The small disparity between the two values occurs because the former controls for differences in demographics and time of acquisition, whereas the latter does not. Another reason for the disparity is that the former is the difference on the day of acquisition, whereas the latter is the difference on an average day in 2006.

[7]Note that in the model with the interaction term included, the coefficient of referral program (.917, $p > .05$) is not the average difference between referred and nonreferred customers anymore but rather the difference between the two groups on the day of acquisition (i.e., when the interaction variable Log(duration) equals 0; see Irwin and McClelland 2001). Thus, the insignificant coefficient of referral program in the model including the interaction term does not invalidate the finding of a significant difference in retention between the two groups posited in H_{2a}.

TABLE 2
Main Results for Differences in Daily Contribution Margin, Churn (i.e., the Converse of Retention), Observed Customer Value, and Customer Lifetime Value

	H_{1a} Daily Contribution Margin	H_{1b} Daily Contribution Margin (Time Varying)	H_{2a} Churn	H_{2b} Churn (Time Varying)	H_3 Observed Customer Value	H_3 Customer Lifetime Value
Referral program	.076***	—[a]	–.198**	.917	49.157***	39.906***
	(.010)	—	(.059)	(1.479)	(7.096)	7.152
Age	.003***	—	.011**	.011***	1.879***	1.626***
	(.000)	—	(.002)	(.002)	(.283)	(.285)
Female	–.009	—	–.034	–.034	–4.459	–3.376
	(.010)	—	(.056)	(.056)	(6.902)	(6.958)
Sarried	–.078*	—	–.027	–.028	–52.798*	–52.258*
	(.033)	—	(.166)	(.166)	(22.427)	(22.563)
Single	–.040	—	–.163	–.163	–27.306	–24.035
	(.033)	—	(.167)	(.167)	(22.573)	(22.706)
Divorced	–.016	—	–.176	–.177	–12.278	–7.656
	(.037)	—	(.183)	(.183)	(24.776)	(24.933)
Widowed	.111*	—	–.470*	–.470*	76.085*	87.249**
	(.046)	—	(.212)	(.212)	(31.128)	(31.355)
Acquired January 2006	.172***	—	–1.828**	–1.833***	228.228***	247.960***
	(.039)	—	(.201)	(.201)	(31.589)	(31.666)
Acquired February 2006	.063*	—	–1.365**	–1.369***	127.706***	133.591***
	(.031)	—	(.160)	(.159)	(24.172)	(24.411)
Acquired March 2006	.089**	—	–1.155**	–1.157***	136.393***	135.755***
	(.026)	—	(.126)	(.126)	(19.103)	(19.280)
Acquired April 2006	.084**	—	–1.215**	–1.208***	124.793***	123.153***
	(.027)	—	(.140)	(.140)	(18.753)	(18.895)
Acquired May 2006	.082**	—	–1.529**	–1.524***	114.302***	119.426***
	(.025)	—	(.150)	(.150)	(16.791)	(16.909)
Acquired June 2006	.066**	—	–1.016**	–1.013***	91.090***	92.643***
	(.022)	—	(.122)	(.122)	(14.326)	(14.475)
Acquired July 2006	.062**	—	–1.026**	–1.023***	79.574***	84.200***
	(.021)	—	(.122)	(.122)	(12.717)	(12.839)
Acquired August 2006	.059**	—	–.841**	–.838***	69.213***	73.167***
	(.020)	—	(.119)	(.119)	(12.111)	(12.233)
Acquired September 2006	.077**	—	–.679**	–.676***	72.213***	76.352***
	(.022)	—	(.126)	(.126)	(13.199)	(13.335)
Acquired October 2006	.037	—	–.434**	–.432***	36.602*	39.391***
	(.020)	—	(.108)	(.108)	(11.133)	(11.257)
Acquired November 2006	.021	—	–.217*	–.215*	19.252	20.551
	(.019)	—	(.105)	(.105)	(10.497)	(10.632)
Year 2007 (dummy)		–1.306				
		(.732)				
Year 2008 (dummy)		–2.259				
		(1.258)				
Cumulative Days (in thousands)		3.513				
		(1.994)				
Cumulative days (in thousands) × referral program		–.231**				
		(.085)				
Log(duration) × referral program				–.176		
				(.232)		
Constant	.154***				66.250*	120.949***
	(.040)				(26.742)	(26.937)
Observations	9495	28,353	9495	9495	9495	9495
R^2	.025	.350			.040	.040
Log-pseudo-likelihood			–11,715.6	–11,715.4		

*$p < .05$.
**$p < .01$.
***$p < .001$.
[a]Captured by customer-specific fixed effects.
Notes: Robust standard errors are in parentheses.

tomer is approximately 25% more valuable to the bank than a comparable nonreferred customer, within the observation period. If we take into account the difference in acquisition costs of approximately 20 euros, the difference in customer value is nearly 35%. These results strongly support H_3.

Because the margin differential of referred customers erodes over time even though the loyalty differential does not, the question arises whether referred customers remain more valuable beyond the observation period. Repeating the analysis for the six-year customer lifetime value, we show that referred customers indeed remain more valuable. The average customer lifetime value of referred customers is approximately 6 euros higher than that of other customers (Mann–Whitney test, $p < .001$). After we control for differences in customer demographics and time of acquisition, the value differential is approximately 40 euros (Column 6 of Table 2; $p < .001$). Because the average customer lifetime value of a nonreferred customer is 253 euros, a referred customer is approximately 16% more valuable to the bank than a comparable nonreferred customer over a horizon of six years. If we take into account the difference in acquisition costs of approximately 20 euros, the difference in customer lifetime value is approximately 25%. This value differential is quite considerable.

We also assess the extent to which the differences in customer value are robust across various subsets of customers. Table 3 reports the regression coefficients for the referral program in models of customer value, with the same controls as in the previous analysis in Columns 5 and 6 of Table 2. Row 1 of Table 3 shows that the results for the retail customer segment are nearly identical to those for the entire sample. This is not surprising, because retail customers make up approximately 90% of our overall sample. More informative is that the difference in customer value also exists in the nonretail segment (Row 2 of Table 3).

Rows 3 and 4 of Table 3 show that the positive referral differential exists among high-margin customers, defined as those in the top decile based on margin, but not low-margin customers, defined as those in the bottom decile based on margin.[8] The remaining rows in Table 3 show that sizable value differentials between referred and nonreferred customers exist among both men and women and among all age ranges, except for those over the age of 55. Overall, the acquisition through a referral program is associated with higher customer value for the majority of customer types, but not for all. These results suggest that using referral programs might not be beneficial in all customer segments, an idea we develop further in the "Discussion" section.

TABLE 3
Results for Difference in Customer Value Within Various Segments

	Observed Customer Value (Robust Standard Errors)	Customer Lifetime Value (Robust Standard Errors)	N (N of Referred Customers)
Retail customers	48.620***	39.082***	8384
	(6.574)	(6.633)	(4473)
Nonretail customers	77.309**	69.803*	1111
	(29.855)	(30.023)	(536)
High margin customers	80.421**	69.669*	950
	(27.768)	(28.004)	(533)
Low margin customers	–1.146	–13.212***	962
	(1.581)	(2.087)	(247)
Male customers	51.679***	42.305***	4371
	(10.600)	(10.669)	(2150)
Female customers	47.437***	38.274***	5124
	(9.604)	(9.690)	(2859)
≤25 years of age	35.662**	17.701	1808
	(12.914)	(12.945)	(1242)
26–35 years of age	101.975***	85.280***	2170
	(14.908)	(14.822)	(1298)
36–45 years of age	66.148***	57.401**	1621
	(17.534)	(17.707)	(835)
46–55 years of age	62.763**	56.834**	1437
	(19.671)	(19.827)	(617)
56–65 years of age	9.433	5.122	1153
	(21.189)	(21.195)	(481)
>65 years of age	–1.577	–8.589	1306
	(21.421)	(21.409)	(536)

*$p < .05$.
**$p < .01$.
***$p < .001$.
Notes: Each row displays the coefficient of referral program in models with the same control variables as in Table 2 but estimated for specific segments.

Robustness Checks

Table 4 shows that the hypothesis tests are robust to including retail versus nonretail segment membership as an additional control variable and allowing the effect of the referral program to vary as a function of age, sex, marital status, and retail segment membership. Given the results of Table 3, we also allowed for a nonlinear effect of age.[9] We mean-center all variables that interact with referral program, so its coefficient still reflects the main effect. This coefficient keeps its sign and significance in each model, so the hypotheses remain supported. The coefficients are larger than in Table 2, in which we did not control for segment membership and nonlinear age effects, indicating that our main analysis provides rather conservative estimates of the referral effects.

As a second robustness check, we repeated the analyses presented in Table 2 for the sample including all outliers. The direction and significance of the referral effect remained the same, but the size of several effects increased. The difference in daily contribution margin increased from 7.6 cents to 16 cents per day, the margin erosion increased from 23.1 cents to 45.4 cents per thousand days, the churn hazard reduction remained at 20%, and the difference in customer lifetime value increased from 40 euros to 66 euros. These

[8]Low-margin customers and high-margin customers are found in both the retail and the nonretail segments.

[9]Because some readers may be interested in how the effect of referral program is moderated by covariates in the time-varying contribution model, we estimate the latter using a random coefficients specification rather than the fixed-effects specification used in Table 2.

TABLE 4
Robustness Checks Allowing for Referral Effects to be Moderated

	H_{1a} Daily Contribution Margin	H_{1b} Daily Contribution Margin (Time Varying)	H_{2a} Churn	H_{2b} Churn (Time Varying)	H_3 Observed Customer Value	H_3 Customer Lifetime Value
Referral program	.133***	.228***	–.270**	.791	88.413***	79.695***
	(.017)	(.062)	(.084)	(1.479)	(10.870)	(10.949)
Age (mean centered)[a]	.310***	.529**	1.421***	1.421***	199.247***	164.893***
	(.060)	(.191)	(.361)	(.362)	(41.286)	(41.647)
Age^2 (mean centered)[a]	–.004	–.779	–.014	–.014	–2.276	–2.190
	(.003)	(.733)	(.014)	(.014)	(1.834)	(1.848)
Female (mean centered)	–.008	.035	.017	.016	–3.822	–2.828
	(.013)	(.041)	(.076)	(.076)	(9.393)	(9.487)
Married (mean centered)	.050	.828***	–.445*	–.445*	34.372	38.493
	(.039)	(.126)	(.201)	(.202)	(27.838)	(28.187)
Single (mean centered)	.080*	.933***	–.472*	–.473*	52.010	59.890*
	(.040)	(.128)	(.211)	(.211)	(27.774)	(28.119)
Divorced (mean centered)	.111*	.916***	–.589*	–.590*	77.122*	86.686**
	(.044)	(.139)	(.231)	(.231)	(31.289)	(31.696)
Widowed (mean centered)	.340***	1.104***	–1.011***	–1.012***	236.446***	254.709***
	(.058)	(.154)	(.272)	(.273)	(40.821)	(41.259)
Nonretail segment (mean centered)	.440***	.551***	–.263*	–.263*	310.169***	311.262***
	(.031)	(.060)	(.124)	(.124)	(21.972)	(22.152)
Age × referral program[a,b]	.151	.081	–.531	–.532	99.676	117.447*
	(.086)	(.255)	(.514)	(.514)	(57.745)	(58.183)
Age^2 × referral program[a, b]	–.015***	–.311	.022	.022	–10.212***	–10.392***
	(.004)	(1.018)	(.020)	(.020)	(2.539)	(2.556)
Female × referral program[b]	–.005	–.019	–.104	–.104	–2.980	–2.982
	(.020)	(.056)	(.112)	(.112)	(13.210)	(13.320)
Married × referral program[b]	–.162*	–.974***	.953**	.951**	–108.801*	–114.852*
	(.068)	(.174)	(.362)	(.362)	(45.824)	(46.049)
Single × referral program[b]	–.097	–.972***	.743*	.743*	–62.859	–70.679
	(.068)	(.175)	(.366)	(.366)	(45.988)	(46.207)
Divorced × referral program[b]	–.147*	–.982***	.916*	.917*	–103.598*	–112.706*
	(.074)	(.190)	(.394)	(.394)	(50.159)	(50.458)
Widowed × referral program[b]	–.270**	–1.181***	1.246**	1.248**	–197.134**	–211.207**
	(.091)	(.222)	(.456)	(.456)	(60.695)	(61.046)
Nonretail × referral program[b]	–.025	–.084	.014	.013	–49.754	–49.193
	(.046)	(.084)	(.188)	(.188)	(30.805)	(31.001)
Year 2007 (dummy)		–1.487***				
		(.143)				
Year 2008 (dummy)		–2.562***				
		(.236)				
Cumulative days (in thousands)		4.004***				
		(.387)				
Cumulative days (in thousands) × referral program		–.220*				
		(.101)				
Log(duration) × referral program				–.167		
				(.232)		
Constant	.211***	.244***			100.219***	147.265***
	(.016)	(.056)			(9.809)	(9.921)
Observations	9495	28,353	9495	9495	9495	9495
R^2	.107	.099[c]			.123	.122
Log-pseudo-likelihood			–11,705.8	–11,705.6		

*$p < .05$.
**$p < .01$.
***$p < .001$.
[a]We divide age by 100 for better readability.
[b]The first variable in this interaction is mean centered.
[c]Because the model is a random coefficients model estimated with residual maximum likelihood, this value is a pseudo-R-square calculated as the squared correlation between predicted and actual values.
Notes: Robust standard errors are in parentheses. All models include dummies for month of acquisition.

results suggest that our main analysis is rather conservative with regard to the size of the referral differentials.

Although hazard analysis properly accounts for right censoring, managers are also interested in simply knowing who is likely to have remained with the firm within a certain time frame. Therefore, we also assessed the relationship between referral and the probability of still being with the bank 21 months after acquisition. This time span is the longest duration observable without right censoring for every customer, including those who were acquired last, at the end of December 2006. Using logistic regression and controlling for demographics and month of acquisition, we find that referred customers are approximately 22% less likely to leave the firm within the first 21 months ($p < .01$).

Computing the customer lifetime value over three, rather than six, years after acquisition and repeating the analysis by controlling for demographics and time of acquisition yields a value differential between referred and nonreferred customers of 52 euros ($p < .001$) rather than 40 euros. Both the size and the statistical significance of the latter value are rather robust to reestimating the model on smaller random samples of 90% (39 euros, $p < .001$), 75% (42 euros, $p < .001$), 50% (48 euros, $p < .001$), and 25% (36 euros, $p < .01$). We also computed the expected value differential if there were no difference in retention between referred and nonreferred customers. The differential in six-year customer lifetime value decreased from 40 euros to 33 euros.

Finally, we extended the model of margin dynamics and allowed the effect of time and its interaction with referral to vary as a function of observed customer demographics, retail versus nonretail status, and normally distributed unobserved heterogeneity. This extended random coefficients model did not fit the data better: The squared correlation between observed and predicted values (pseudo-R^2) increased by only .1%, and the Bayesian information criterion even decreased. Most important, the coefficients of central interest and the statistical inference were not affected: Customers acquired through referral had a sizable initial margin advantage that eroded to zero after approximately 1000 days.

Discussion

Key Findings

Evidence of the economic value of stimulated WOM and of the customers it helps acquire has been sorely lacking. Our study addresses this gap in the context of referral programs and documents the attractiveness of customers acquired through such a program: Contribution margin, retention, and customer value all were significantly and sizably higher for referred customers. In short, referred customers are more valuable in both the short and the long run. Yet we also find that the effect is not uniform across all types of customers and that the referral program was less beneficial when used to acquire older customers or low-margin customers.

In our application, the value of referred customers in the six years after acquisition was 40 euros (or 16%) higher than that of nonreferred customers with similar demographics and time of acquisition. Considering the initial reward of 25 euros given to the referrer as an investment, this implies a return on investment of approximately 60% over a six-year span. This is a conservative estimate because it does not take into account that the total acquisition costs of referred customers are approximately 20 euros lower than those of other customers.

Implications for Practice

Several scholars have expressed cautious skepticism about the value of "viral-for-hire" and other stimulated WOM (e.g., Trusov, Bucklin, and Pauwels 2009; Van den Bulte 2010). Doubts about the benefits of stimulated WOM have long frustrated managers facing demands to increase their marketing return on investment. Our findings are important news for practitioners considering deploying customer referral programs in their own firm. Assuaging prior skepticism, we document a positive value differential, in both the short run and the long run, between customers acquired through a referral program and other customers. Importantly, this value differential is larger than the referral fee. Thus, referral programs can indeed pay off.

The positive differential indicates that abuse by opportunistic customers and other harmful side effects of referral programs are much less important than their benefits. The referral program we analyzed was especially prone to exploitation because no conditions, such as minimum stay or assets, applied to the newly acquired customer. Finding a positive value differential of referred customers in this setting is especially compelling. Moving beyond referral programs specifically, our study indicates that a stronger focus on stimulated rather than organic WOM is worth considering (Godes and Mayzlin 2009).

However, our results also suggest that firms should think carefully about what prospects to target with referral programs and how big of a referral fee to provide. For the program we analyzed, we found that the customer value differential is much larger in some segments than in others. People under the age of 55 and high-margin customers are more attractive to acquire through a referral program. It is not necessarily a coincidence that these customers also tend to be more profitable for banks (and many other consumer marketers). To the extent that the value differential stems from better matching and social enrichment, as sociological theory suggests and as employee referral programs have documented, referral programs do not "create" higher-value customers by transforming unattractive prospects into attractive customers. Rather, they help firms selectively acquire more valuable prospects and retain them longer at lower cost. Thus, instead of the currently practiced "all-in" approach, firms should design and target referral programs such that attractive customers are more likely to be enticed.

Managers must also make their customers aware of their referral programs. Bank of America, for example, communicates its referral program on all its automated teller machines throughout the United States. Connecting referral programs with online activities might help further increase their reach beyond existing customers' networks of strong

ties and face-to-face interactions. Managers must also make it convenient for prospects to actually become a customer. A possible application is to partner with online communities and make it easy for people to start a relationship with the firm online, immediately after they receive a referral from an existing customer in the same community. Our results suggest that such awareness and facilitation efforts should be targeted selectively to customers who offer the highest value differential.

The referral fee is another issue that requires attention when designing a referral program. Many programs offer the same reward to each referrer (Kumar, Petersen, and Leone 2010). Yet, as we show, the value of referred customers can vary widely even for one company. Thus, firms may benefit from offering rewards based on the value of the referred customer. However, the question then becomes how to do this without adding too much complexity to the program. There may be a simple answer: A standard homophily argument suggests that valuable referrers are more likely to generate valuable referrals. Thus, firms may want to make the referral fee a function of the value of the referrer.

A different approach to take advantage of the referral effect would be to try to generate conditions in which nonreferred customers become subject to the same mechanisms that make referred customers more valuable. To the extent that the differences we have documented stem from better matching, from social enrichment, or from other mechanisms that firms can actively foster among all customers, firms may be able to dramatically "scale up" the beneficial referral effect beyond dyads of referring and referred customers. For example, pharmaceutical companies increasingly involve local opinion leaders in their speaker programs and other medical education efforts. They do so to capitalize on these physicians' relevance and credibility with practicing physicians.

Firms in the same industry often reward referrers with the same amount. For example, most German banks offer 25 euros for a referral, as does the bank we studied. Our results indicate that managers set the referral fee rather low, allowing the firm to reap attractive returns from its program. Offering higher rewards might lead to even more customer acquisitions while still providing positive returns on investment. Firms should calculate the reward considering their specific program and the customers it attracts instead of merely following their competitors.

Further Research

Our study focuses on referred and nonreferred customers of one particular bank. Although its customer base and referral program have no unusual characteristics, replications would nonetheless be welcome. Such studies require rich, firm-specific data on a large set of customers, with individual profitability observed over a long period. Therefore, we expect replications and extensions to come from other single-firm studies such as ours and those of Godes and Mayzlin (2009), Haenlein (2010), Iyengar, Van den Bulte, and Valente (2011), and Nitzan and Libai (2010). Because the mechanisms of better matching and social enrichment are likely to be more important for complex products with important experience attributes, rather than simple products with mostly search attributes (e.g., Coverdill 1998; Kornish and Li 2010; Rees 1966), studies of multiple products with varying levels of complexity would be especially informative.

It is likely that the quality of the matches with the firm deteriorates as existing customers refer more new customers. It would be of practical interest to know at what rate the quality of referrals decreases and at what point it tends not to justify the cost of acquisition anymore. It may also be useful to know if the motivation of the referrer changes depending on the reward and whether the size of the reward affects the quality of the referred customer.

Several of the implications for practice point to the benefits of better understanding the drivers of the value differential we documented. Although our results are consistent with the better matching and social enrichment mechanisms we used to develop our hypotheses, our analysis focused on the consequences for contribution margin, retention, and customer value rather than on the intervening mechanisms. Research aimed at more directly parsing out the mechanisms is likely to require information about actual dyads of referring and referred customers. This would enable researchers to test, for example, the social enrichment argument by matching the referred customer with the respective referrer and analyzing the dependence of their retention. Additional survey data may help document differences in product knowledge over time and shed light on the existence of an informational advantage eroding over time. Having matched dyad-level data on both referring and referred customers would also make it possible to check whether referral dyads exhibit homophily and whether the value of referred customers varies systematically with that of their referrer (Haenlein 2010; Nitzan and Libai 2010). This would yield valuable insights for the design of individual rewards instead of the currently practiced "one-size-fits-all" approach.

Conclusion

This study provides the first assessment of economically relevant differences between customers acquired through a referral program and customers acquired through other methods. It documents sizable differences in contribution margin, retention, and customer value; analyzes whether these differences erode or persist over time; and investigates differences across customer segments. The finding that, on average, referred customers are more valuable than other customers provides the first direct evidence of the financial attractiveness of referral programs and also offers much-needed evidence of the financial appeal of stimulated WOM in general.

Improvements in the targeting, design, and implementation of such programs will require a better understanding of the drivers of the value differential. The dyadic interdependence in the behavior of the referrer and the referred customer deserves special attention in further research because it is likely to prove highly relevant to both better theoretical understanding and more effective program management.

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