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RETAILING MANAGEMENT

9e



ANALYZING CUSTOMER DATA AND IDENTIFYING TARGET CUSTOMERS

LO3

Explain the methods used to analyze customer data and identify target customers.

The next step in the CRM process (see Exhibit 11-1) is to analyze the customer data and convert them into information that will help retailers develop programs for increasing the value they offer to their best customers, or those customers whose loyalty and repatronage will add significantly to the retailer's bottom line. Two objectives for analyzing the customer database are (1) identifying the retailer's best customers and (2) using analytical methods to improve decisions made by retail managers. These two objectives are discussed in this section.

Identifying the Best Customers

One of the goals of CRM is to identify and cater to the retailer's most valuable customers. Retailers often use information in their customer databases to determine how valuable each customer is to their firm. The value of a customer, called **customer lifetime value (CLV)**, is the expected contribution from the customer to the retailer's profits over their entire relationship with the retailer. Retailers typically use past behaviors to forecast their CLV. To illustrate some of the factors considered in developing a measure of CLV, consider the purchase histories of two customers during the last 12 months shown here:

	December	January	February	March	April	May	June	July	August	September	October	November	Total
Shirley	\$400	0	0	0	0	0	0	0	0	0	0	0	\$400
Marcia	\$10	\$10	\$25	\$25	\$15	\$25	\$40	\$20	\$35	\$35	\$50	\$65	\$355

Which woman has the highest CLV—that is, who would be the most valuable customer for the retailer in the future? If the retailer only considered the purchases made by the two women over the past 12 months, the retailer might conclude that Shirley is most valuable because she has bought the most merchandise during the last 12 months (\$400 versus \$355). But Shirley's purchase history might reflect her visit to the United States from Brazil, making a one-time purchase, and being very unlikely to patronize the retailer again. As the retailer digs deeper into the data, it might decide that Marcia is the most valuable customer because she purchases merchandise both more frequently and more recently. In addition, her monthly purchases are trending up. Even though Shirley might have bought more in the last 12 months, Marcia's purchase pattern suggests she will buy more in the future. Retailing View 11.2 illustrates the use of an **RFM analysis**—a method often used in catalog and Internet channels to determine customer segments that a retailer should target for a promotion or catalog mailing. The method uses three factors to evaluate the potential contribution of each customer segment: how *recently* the customers in the segment made a purchase, how *frequently* they make purchases, and how much *money* they have spent.

In the example, the classification of customers into these segments is based on the profitability of the customers, not sales. The use of sales to identify a retailer's best customers can be misleading. For example, airlines assign rewards in their frequent-flyer programs on the basis of miles flown. These programs provide the same rewards to customers who take low-cost, less profitable flights as to those who make a larger contribution to the airline's profit by flying first class and paying full prices. Sophisticated statistical methods are typically used to estimate the CLV for each customer, like Shirley and Marcia, based on more than their recency, frequency, and amount purchased.¹⁵ These deeper analyses consider the gross margin from the customer's purchases and the costs associated with the purchase, such as the cost of advertising and promotions used to acquire the customers, and the cost of processing merchandise that the customer returned. For example, customers who pay full price and buy the same amount of merchandise have a higher CLV than customers who only buy items on sales. Customers who return 30 percent of the merchandise they purchase have a lower CLV than customers who rarely return merchandise.

Retail Analytics

Retailers can use data they have collected about their customers to measure each customer's CLV. In the remaining portion of this section, we explain how the availability of a customer database provides a resource that retailers can use to develop strategies and make better decisions. Retailing View 11.3 describes how the drugstore chain CVS derives insights by analyzing its extensive customer database.



Retail analytics are applications of statistical techniques and models that seek to improve retail decisions through analyses of customer data.¹⁶ **Data mining** is an information processing method that relies on search techniques to discover new insights into the buying patterns of customers, using large databases.¹⁷ Three of the most popular applications of data mining are market basket analysis, targeting promotions, and assortment planning.

Market Basket Analysis In a **market basket analysis**, the data mining tools determine which products appear in the market basket that a customer purchases during a single shopping trip. This analysis can suggest where stores should place merchandise and which merchandise to promote together based on merchandise that tends to show up in the same market basket.

To perform a market basket analysis, a computer program counts the number of times two products get purchased at the same time. An often-used example of market basket analysis is the discovery by a supermarket chain that on Friday



11.2 RETAILING VIEW Illustration of RFM Analysis

The RFM analysis in Exhibit 11-2 was conducted by an apparel retailer that needed to decide to which customer segments to send its catalogs. The retailer divided its catalog channel customers into 32 segments on the basis of how many orders each customer placed during the previous year, how much merchandise the customer purchased during the past 12 months, and the last time the customer placed an order. Each segment is represented by one cell in Exhibit 11-2. For example, the customers in the upper-left cell have made a purchase within the last 2 months (recency), made one or two purchases in the last year (frequency), and spent less than \$50 over the last 12 months (money). For each RFM segment, the retailer determined the percentage of customers in the segment who made a purchase from the last catalog sent to them. For example, 5 percent of the customers in the upper-left cell of Exhibit 11-2 placed an order from the last catalog sent to them. With information about the response rate and the average gross margin from orders placed by customers in each cell, the retailer can calculate the expected profit from the last catalog sent to customers in each cell. For example, if the average gross margin from orders placed by customers in the upper-left cell is \$20 and the cost of sending a catalog to customers in the cell is \$0.75, with a five percent

response rate the catalog would make \$0.25 per customer mailed a catalog in that segment:

$\$20 \text{ contribution} \times 0.05 \text{ response rate} = \$1.00 \text{ expected revenue per person}$

$\$1.00 - \$0.75 \text{ cost person} = \$0.25 \text{ expected contribution per person}$

Using the 32 segments in Exhibit 11-2, the retailer might develop a strategy for each segment, as shown in Exhibit 11-3. For example, the retailer might focus on building its loyalty among customers in the segments in the lower-left area but not send any more catalogs to customers in the upper-right segments, because they are not profitable.

Sources: David Gillman, "Use SPSS Statistics Direct Marketing Analysis to Gain Insight: Analyze Customer History Using RFM," October 26, 2012, ibm.com/developerworks/; Jayanthi Ranjan and Ruchi Agarwal, "Application of Segmentation in Customer Relationship Management: A Data Mining Perspective," *International Journal of Electronic Customer Relationship Management* 3, no. 4 (2009), pp. 402-414; and Ching-Hsue Cheng and You-Shyang Chen, "Classifying the Segmentation of Customer Value Via RFM Model and RS Theory," *Expert Systems with Applications* 36, no. 3 (2009), pp. 4176-4184.

DISCUSSION QUESTION

How and why would a retailer use RFM analysis?

EXHIBIT 11-2
RFM Analysis for a
Catalog Retailer

Frequency	Monetary	RECENCY			
		0-2 months	3-4 months	5-6 months	Over 6 months
1-2	<\$50	5.0%*	3.5%	1.0%	0.1%
1-2	Over \$50	5.0	3.6	1.1	0.1
3-4	<\$150	8.0	5.0	1.5	0.6
3-4	Over \$150	8.8	5.0	1.7	0.8
5-6	<\$300	10.0	6.0	2.5	1.0
5-6	Over \$300	12.0	8.0	2.7	1.2
Over 6	<\$450	15.0	10.0	3.5	1.8
Over 6	Over \$450	16.0	11.0	4.0	2.0

*Percentage of customers in the cell who made a purchase from the last catalog mailed to them.

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EXHIBIT 11-3
RFM Target
Strategies

Frequency	Monetary	RECENCY			
		0-2 months	3-4 months	5-6 months	Over 6 months
1-2	<\$50	First-time customers		Low-value customers	
1-2	Over \$50				
3-4	<\$150	Early repeat customers		Defectors	
3-4	Over \$150				
5-6	<\$300	High-value customers		Core defectors	
5-6	Over \$300				
Over 6	<\$450				
Over 6	Over \$450				

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evenings between 6 and 7 p.m., many market baskets, particularly those bought by men, contained both beer and baby diapers. This relationship between beer and baby diapers arises because diapers come in large packages, so wives, who do most of the household shopping, leave the diaper purchase to their husbands. When husbands buy diapers at the end of the workweek, they also want to get some beer for the weekend. When the supermarket discovered this shopping pattern, it put a premium beer display next to the diapers. Because the premium beer was so conveniently placed next to the diapers, men tend to be up-sold and buy the premium brands rather than spend time going to the beer aisle for



1 RETAILING VIEW Using Customer Data at Kroger

Kroger is the largest supermarket retailer in the United States, with more than \$70 billion in sales. It is also the sixth largest retailer in the world. Its impressive status is largely the result of a strategic decision it made to build a competitive advantage by collecting and analyzing customer data, then to use such data to manage its customer relationships. It began working with the UK-based consulting firm Dunnhumby in 2001. Since then, the partners have developed a joint venture called Dunnhumby USA that is responsible for converting all the data that Kroger collects from its customers when they swipe loyalty cards or enter their phone numbers at the point-of-sale into viable information that can help Kroger make decisions.

Similar to most supermarkets, Kroger's primary communication tool is a weekly newspaper circular featuring sale products. Category managers nominate products to include in the circular, and space is allocated according to the importance of the product category, any special promotions offered by vendors, and the margin Kroger earns on the advertised item.

REFACT

Dunnhumby USA has grown from 3 employees in 1992 to more than 1,000 today.⁶

By analyzing which items customers purchase in each trip, Dunnhumby USA has been able to improve this method and increase the effectiveness of the weekly circular. In particular, the purchase data identified complementary products, such that they prompted the sale of other items. For example, when customers purchase sliced deli roast beef, they also tend to purchase other deli meats, cheese, mustard, mayonnaise, and a loaf of fresh rye bread. But when they buy deli turkey, they don't buy these additions. Thus, roast beef is a better candidate for the circular, because it will tend to trigger the purchase of other items.

Kroger mails 55 million loyal customer mailings to their frequent-shopper cardholders every quarter. These mailings offer promotions on products that customers normally buy, as well as on products that Kroger predicts they would like, based on its analyses of what similar customers buy. So, for instance, if Kroger can predict that a customer is part of a young family, based on the purchase of hot dogs, Kellogg's Cocoa Krispies, and a lot of animal crackers, it can provide that family with a coupon for milk.

Retailers frequently segment their market using demographic variables, such as age, income, and education,



Dunnhumby USA analyzes the products that customers buy at the same time to make assortment and promotion decisions.

but they are poor predictors of sales (see Chapter 4). Dunnhumby USA's analyses enable Kroger to develop a better segmentation scheme based on actual purchase behavior rather than demographics. With these analyses, Kroger can identify customer segments that have a newborn baby, like to cook, or entertain frequently. Such precise segmentation capabilities not only help Kroger appeal appropriately to customers, encouraging their loyalty, but they also enable better decisions about in-store assortments, merchandise locations, store locations, and promotional designs.

Sources: Dhruv Grewal, Michael Levy, and Britt Hackmann, "Making Loyalty Programs Sing," Working Paper, Babson College, 2013; Josh Pichler, "Firm Remakes Retailers' Knowledge of Shoppers," *The Cincinnati Enquirer*, January 31, 2013; and Josh Pichler, "DunnhumbyUSA Combs through Data to Help Retailers Reward their Most Loyal Customers," *The Cincinnati Enquirer*, January 31, 2013.

DISCUSSION QUESTION

Why is segmentation based on purchase behavior superior for encouraging customer loyalty to segmentation based on demographics?