RETAIL ANALYTICS

The Secret Weapon

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CHAPTER 1

Retailing Analytics: An Introduction

The purpose of this chapter is to help develop a basic understanding of retail terminology and concepts across a wide variety of backgrounds and experience levels. The one constant factor is that we are all using analytics in some form in the support of our organizations.

A significant portion of my work over the past seven years has involved using data from consumer credit card programs to improve retail in many areas. Credit card data can be found in various levels of detail, from bin range at the transaction to aggregated card type (Visa, MasterCard, etc.). I include the use of credit data within the various sections and show how it was used to improve many types of analytics.

I also include perspectives from the credit card companies, as many of these companies do not have any practical retailer experience. They constantly struggle trying to find a bridge between credit and retail. I have found analytics to be a great bridge between retail and credit companies, as the data provided by both, when combined, can be an extremely important source of insights. Helping these credit companies understand retail organizations will, in the end, help retailers.

RETAILER GOODWILL

Goodwill can be described as those warm and fuzzy feelings that make the clients feel that you have their best interests at heart, and it is important to show that you and your analytics team are not singularly focused on your business at the expense of the retailer's business. Fuzzy metrics are very hard to measure mathematically and, as such, are difficult to grade for performance. Customer relationship management (CRM) is all about the customer, which, in this case, is your client, the retailer. While in the global General Electric (GE) role, GE analytics teams had to manage the customer-client relationship. But instead of just getting the end customer to use more of our card services, we also wanted to have a positive influence so that the clients (retailers, in most cases) would request more products from GE, seek more consultation from analytics, and allow us more involvement within their inner circle. All of these outcomes are very positive, but again, difficult to equate back to any financial gain. Do not lose sight of the importance of these soft benefits; they can be long-term relationship builders. One aspect that can be measured is contract continuation versus renegotiations. Another strong indicator of how the client is feeling toward you is its willingness to recommend either you or your organization to its peers, often referred to as a net promoter score. This can be absolutely invaluable in the business community, and is now a key performance indicator (KPI) in evaluating many businesses.

THE INSIDE SCOOP: RETAIL POWER BROKERS

More often than not, the merchants and buyers are the real operators within the retail business. They pay the bills and bring in the profit. If you can show that increased credit card usage or fact-based analytics will sell more products, they will listen. Remember, the retailer business is selling merchandise, not credit.

Also keep in mind that these are increasingly competitive times for all retailers, and saving fees can be a very important aspect of the retailer's budgeting. So, interchange fees (those fees paid to process credit card transactions) can be of interest to finance and the budgeting areas, but of little interest to the merchants. If you can show that data usage will give the buyer (brand manager) a competitive advantage, she will pay attention.

Almost without fail, retailers are set up in a hierarchical arrangement. There will be different groups within the merchant buying area, usually apparel, hard lines, commodities, sporting goods, and so on. While managing the credit card analytics area, I have found it easiest to align with the head of one merchandise area that best suits credit card marketing, maybe an early adopter (someone who easily accepts new concepts). When you align with this person, try to make it a win for the retailer with some tangible benefits for the card. Once you have some incremental cases that show a win for your partner, you are now able to begin some peer pressure tactics—"If this worked well for partner X, why don't you try this, too?"

This process takes patience and time, but it is well worth the effort. Remember, the merchants are without doubt the *moneymakers* for retailers, and hold the influence. Having them as partners is important and worth the effort. It is crucial to understand the retailers' language, and to communicate back to them in terms they understand and feel comfortable with. If you are to gain their trust, they have to be comfortable that you understand them and their business.

RETAIL ORGANIZATION

Within most retailers, there is a basic organizational structure. The unit that brings in the profit is the merchandise group, most often managed by the general manager or vice president. This individual will be in charge of a full line of merchandise (e.g., apparel, commodities, groceries, entertainment). Below this level is the lead buyer, who would manage a line of goods (e.g., produce, women's slacks, or electronics). A vice president may have as many as five lead buyers, depending on the range of products the retailer carries. Next would be a co-buyer who manages the item-level products within a single category. Another buyer that plays an important role is the re-buyer, who, in most cases, is located at the distribution center (DC). This buyer maintains the ordering flow of the goods into and out of the DC.

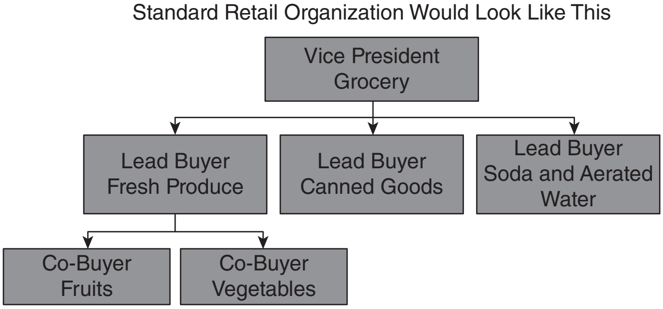
Standard Retail Organization Would Look Like This
Vice President Grocery
Lead Buyer Fresh Produce
Lead Buyer Canned Goods
Lead Buyer Soda and Aerated Water
Co-Buyer Fruits
Co-Buyer Vegetables

Exhibit 1.1 Organization Chart

Understanding how retail businesses are organized is an important and necessary step. Many follow the standard design as shown in Exhibit 1.1. This design shows a clearly defined break in the hierarchy. Each level of the organization will require different levels of analytics support and reporting (summary versus detail). This is a simple view of a retail merchant chart.

A standard organization chart would look like this:

- One vice president: grocery
- Four or five lead buyers: produce, canned goods, aerated waters, and so on
- Four or five co-buyers: fruits, vegetables, and so on

Having the buy-in to your project at each level is ideal, but not always possible. Knowing the buying organization for your particular industry or retailer is critical. Each area can be particularly territorial, and being able to associate your idea with their level of control is very important.

Many organizations are developing executive information systems (EISs) for the more senior members of the organization. These are more interactive approaches to information retrieval. These systems use special reports called dashboards and are supported by smaller subsets of the organization's databases, called cubes. Cubes are fairly complex, but for the purposes of this discussion, consider them to be big servers with predefined fields that allow for the quick loading and retrieval of specific information. Because the information fields on the cube are fixed, the fields do not change, only the most recent information does. For example, the sales data from Division One is available, so you can view this information. The most recent sales information for the division level is always loaded and kept current. If you wanted to see the department-level sales, however, you would have to make a special request, as this was not designed in up front. This sounds complicated, but it is very common.

As you move down from the senior executives, you generally find less automation in the reporting and more complexity in the level of analytics. The senior group would want to know how sales are compared to the previous year. The next level down would want to know which regions were above or below the previous year. As you move down, the questions become much more exact in their analytics requirements. I have found that the questions from the senior group are more strategic and are big questions requiring more time to organize. The questions at the manager level seem to be more tactical in nature: There are far more questions and they are far more detailed.

Another observation about retailers that they use the term *marketing* liberally. There are all sorts of marketing roles across a retailer; I touch on just a few.

Real Estate Marketing

In real estate marketing, you will try to identify where new stores should be built. This starts off with field representatives looking at an available property and determining whether it would be a good location. There is a whole team of analysts working on an evaluation of the sales potential, the existing competitor influence, and the logistics of getting the merchandise to the store, not to mention where the new consumers are and how they would get to the store. You then bring in the finance support team, which again can be part of the real-estate marketing department. Their role is determining what breakeven would be, and how long the store would have to be open to achieve this magic number. I worked in real estate marketing for a few years and found it fascinating and a great learning experience. The range of high-level SAS analytics was extensive, from designing distance and square-foot algorithms to building models to determine the transfer rate of sales from specific competitors. Transfer rates are the effect of moving sales from a consumer at Store 12345 to Store 45678. This sounds simple, but it is really very complex. GIS, or geographic information systems (detailed in Chapter 4), are an integral part of this department, as the utilities for calculating multiple factors at the same time are enormous. If you like high-powered analytics and learning about vector and thematic mapping, I would highly recommend this field.

Creative Advertising Marketing

Creative advertising is more of a traditional marketing area, in which you work with the design side of the business. Which colors are in trend right now, what products should be advertised to bring in more shoppers, and what type of media should be used (e.g., radio, television, print, or billboard)? This area can also include which geographies to advertise in, which could be the local television network or a cable network. Many times, this area has an analytics team to help develop the results of each promotion, and can include very advanced market-mix analysis. There are times—quite frequently, actually—when multiple media are running at the same time. To judge which media type was contributing the most to a product's sale, a technique called media-mix modeling is used. This technique weighs each of the particular media and assigns some portion of the promotional sales back to it. This is very oversimplified, but that is the basic premise.

Operations Marketing (Research)

Operations marketing falls within the marketing organization, even though operations typically resides in the research function. This includes developing many qualitative consumer studies (focus groups, exit surveys, store intercepts, and so on). Each of these studies consists of asking a set number of consumers a list of questions from which you can tabulate the answers and form a qualitative opinion. There is a science to developing the correct group of questions surrounding a particular business need, and asking the question under the correct context is critical. Focus groups are composed of a group of preselected individuals that fit a certain makeup (that is, they have shopped your store, have used your credit card, or have purchased your brand in the last 60 days). The group is brought into a room and asked general, preselected questions by a moderator who keeps the discussions moving toward some logical conclusion.

Exit surveys involve stopping consumers as they leave your store, a mall, or some other location where a lot of people congregate (typically malls). Again, they are asked specific questions, but generally no more than seven or eight, as the more time you take from the shopper, the less relevant the answers will be.

Store intercepts involve stopping consumers while they are still shopping to ask them very pointed questions. Why did you pick up product X today, or why did you walk by product Y today?

Many times consumers are stopped as they enter a store and are asked a number of questions about their current trip. These same consumers are then intercepted on their way out of the store and their receipts are logged against what they said they intended to buy. These studies are very rigorous, but can be extremely informative, as consumers do not always do what they say they are going to do.

Direct Marketing

Next is direct marketing, which is sending mail out that is directly addressed to a particular individual at a specific address. This area is aligned very closely with the CRM and database management group, as direct marketing depends heavily on clean, accurate, consumer-rich data. The biggest concern of direct marketing is to have the correct name and address for the individual being targeted. Next is to be sure you are offering something relevant to the individual (for example, sending a coupon for $1.00 off dog food does not make a big hit if the household does not have a dog).

Strategic Marketing

Strategic marketing is a compilation of most of these previous areas. The big effort here is to plan out the next five years of the business's marketing efforts. Whom do you want to market to? Who will your target consumer be in the next five years? What types of messaging will you use to reach this consumer? How will you gain market share? To fully understand these types of questions, the strategic marketer needs extensive store-level experience along with operations, marketing, and many other forms of background. This area is not for the weak-hearted individual, as team members are often called upon by senior leadership to lay out the company's plan from many different perspectives, on very short notice.

There are a few more, but this covers a great majority of the different types of marketing within a typical retail business.

COMMUNICATING TO THE RETAIL ORGANIZATION

Knowing the correct terminology is a key area; if you do not know the proper terms for the industry, you must do some research. In retail, these terms are used in everyday discussions, and are the minimum level of knowledge:

- *Case pack:* Products are shipped in full cases (for example, 12, 24, or 36 units). These types of products cannot be broken down into smaller quantities.
- *Divisions → Departments → Categories → Subcategories → Baselines → Color → Size:* These are all part of the merchandise hierarchy.
- *Drop shipping:* Prepacking merchandise so that a pallet or large case can be dropped at a store without sorting.
- *EAN:* European article number. This is a European version of the UPC (described below).
- *General merchandise:* Nonfood types of merchandise.
- *Gross margin:* The difference between cost and selling price (revenue minus cost of goods sold).
- *JIT:* Just-in-time shipment.
- *Logistics:* The routes many trucks take to deliver goods from a central warehouse to a store.
- *Markdown:* How much a product will be reduced in price from the listed price.

- *Mark-on:* A term interchangeable with *markup*, indicating the profitability of a product.
- *Pack quantities:* Package quantities designate how many items will be packed in a single bundle.
- *POS:* Point of sale cash registers.
- *Price type:* Regular, markdown, event, rain check, BOGO (buy one, get one free), or clearance.
- *Season code:* A number designating the seasonal nature of a product.
- *SKU:* Stock-keeping unit. This is the basic term for a piece of merchandise.
- *UCC:* Universal Code Council. This council sets the standards for all UPCs.
- *UPC:* Universal product code. This is a bar code that is assigned to a single piece of merchandise.

These are very common terms that are easily understood within the retailers' walls. The more you can fit these terms into your strategy or discussion, the better their impression of you will be. Remember to refer to the back of this book for a full glossary of terms.

POINT OF SALE VERSUS MARKET BASKET DATA

Point of sale data is stored at the SKU (that is, single-product) level. For example, 1,000 pieces of SKU 12345 were sold last week; 12,000 widgets were sold today.

Market basket data includes the relationships between all items within the associated basket together. This ties the purchase history together, which, in turn, builds item affinities (the relationships between those products most frequently purchased together).

Advanced market basket data also includes a customer identification number. With this, you can track purchases over time. Without the time series (over time by day, week, and season) of the data, the value of the data goes down considerably. Tracking changes in purchase behavior over time allows for much stronger variance models, as well as predictors.

You need to be aware of the types and breadth of data that your retailer will have access to (both internal and external data). When beginning to evaluate the retailer's data sources, if appropriate, ask if he will share some of the data with you (demonstrate that there is an incremental benefit). Retailers will most certainly have much more data available to them than they can absorb. The most difficult hurdle to overcome is gaining their trust. One tactic I have used in the past was to offer to evaluate an issue unrelated to credit data for the retailer. We were able to use our advanced analytics approach to provide the retailer with a different perspective on a problem he was facing. This single project opened the doors to more data, which allowed us to provide a better product to both the client and the cardholders.

It also helps if you can be aware of the external data sources that your retailer is using in her business. Sources such as Spectra Marketing, ACNielsen, Claritas, NPD group, and Trade Dimensions, to name a few, can be a tremendous boost to any analysis. By being familiar with retailers' data sources, you can better understand their analytics capabilities. If the retailer will not share this information with you, it is easy enough to determine it on your own through Internet searching.

It is also helpful if you can identify what your retailer's best competitor is using as far as additional data sources. Depending on what level of data they are buying and the breadth of companies they are buying it from, you can get a good insight into where they are headed strategically.

DATA IS GOLD

All merchandise has a life cycle: from the day a store opens for the first time, when the opening inventory is estimated (based on historical data), through the sales of the product, which triggers an order for more. This sale creates a ripple effect that can be felt around the world. If a chair is sold, the register sends a data file to the inventory system for that supply chain, indicating that a chair was sold and the supplier should send another one. If there is one in the DC, it is sent to the store as replenishment.

Now the DC needs to replenish its own stock to be prepared for the next sale. The DC will send a request for merchandise to its supplier (the vendor). These suppliers tend to not keep merchandise in stock, but take orders for future shipments, which are sent out to the raw materials' manufacturers. Many of these manufacturers are now located in places such as China, Taiwan, and Hungary, which may be a considerable distance from your store.

To build a chair, the manufacturer in China buys raw materials from many local areas. The chair is then sent to a re-buyer who works for a supplier that maintains the movement of products to the vendor that keeps shipping the product to the retailer.

This process all started with a single piece of data that was triggered at the POS register.

The next time you buy a newspaper or a chair at the retailer in your neighborhood, think about the process you just triggered.

This is a very simplistic view of a very complex and difficult process. I could go on in great detail about the different types of replenishment, such as JIT, but there are many books on the subject by experts that specialize in just that.

When I started out in retail, we used list books and area merchandisers who would walk down each aisle, writing down how many products of a particular SKU were on the shelf. Each merchandiser had his own department to keep track of, and this process was begun on Monday and continued all week. The list book also noted the case pack (that is, how many units were in a single order) so that we would know when to place the order. Once counting on the sales floor was completed, we would go to the stockroom to count the merchandise back there. We had to calculate the rate of sale (that is, three per day, five per week, and so on) to judge how many products we needed to order so that we did not run out. We kept track of how long it took to get the merchandise to our store so that we did not run out of anything. If we had six on the counter and zero in the stockroom, with a rate of sale of two per day and a ship time of three days, we needed to order right away.

We progressed to trigger figures, using a number—again, written in the list book—that told us the optimal quantity of units to have on hand before we placed an order. This was considered very advanced back then, as we could have more people do the ordering without the need for special training. All of these changes were precursors to the modern POS replenishment systems of today. These are obviously much more advanced, but still work from the same principles.

DATA AS REVENUE: THE PRICE OF RETAIL DATA

There are many companies that buy and sell retail sales data. Some of this data is at the POS SKU level (a single product view), while a smaller number of retailers also sell data at the much lower market basket level (with all product associated back to a single transaction). Depending on the size and scale of data and the quantity and breadth of time span, the retailers can make significant amounts of revenue. This figure can be as much as $20 million to $30 million on an annual basis. There are a few big-name companies, such as ACNielsen, NPD, and IRI, that aggregate retailer data at some point. These third-party firms consolidate the data from many different retailers in such a way as to hide the identity of any one company. They then package it and sell it to both retailers and manufacturers. This data gives an industry perspective and is a very valuable piece of the category management philosophy.

Many manufacturers buy nonaggregated data to help identify what products from other companies are competing directly with theirs, from a retailer perspective. These data points are gathered by collecting purchases at the household level. ACNielsen, NPD, and others have households that collect purchase data through the use of scanners. As the products are brought home, each UPC is scanned and entered into a diary that is transmitted back to the parent company. The company collects information on where the products were purchased, the date and time of purchase, the selling price, and the product specifics. These companies have as many as 150,000 households across the United States participating in these surveys.

To really make this data valuable to both retailers and manufacturers alike, these companies need to add in retailer POS data. These companies will pay quite a bit, depending on the breadth of merchandise categories and the sales volume (that is, number of stores and number of transactions). At one of my retailers, we were able to develop a self-sustaining marketing analytics department by selling specific categories of merchandise data to just one data company.

In Chapter 2, “Retail and Data Analytics,” I cover some technical data storage suggestions in much more detail and go into depth on specific analytics case studies. These case studies cover a broad range of topics and include e-business and online cross-channel techniques.