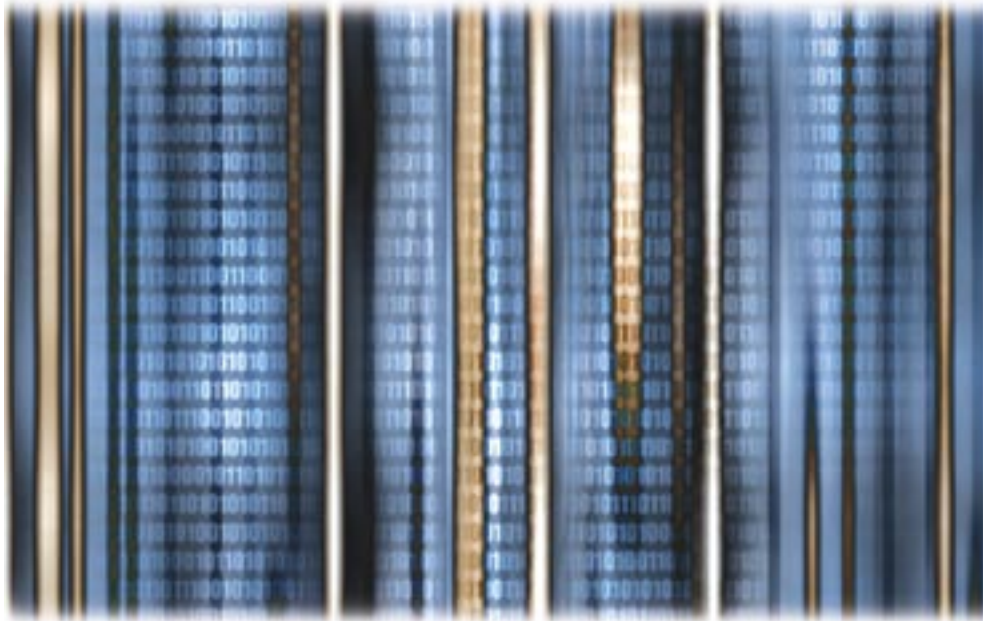


Data Mining

The Next Big Thing in Club Technology

By Bill Boothe

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One of the most frequent technology questions asked of industry specialists is: “What do you see as the next big technology advancement on the horizon for private clubs?” Our answer—data mining. This is a technology well-entrenched in many other industries, but virtually invisible within private clubs. Too bad, since data mining is such a powerful analytical tool that offers knowledge and insights that can change the way an entire industry operates.

Data mining is a broad subject, so we’re going to address it in three separate parts. The first part of this articles focuses on the psychological underpinnings of data mining in an effort to explain the technology’s origins and rationale. Part two reviews the five distinct types of data mining. The final part examines why data mining is not widely employed in the private club industry, and how clubs can change that situation.

Let’s begin with the basics. Data mining is

the "computerized process of detecting patterns in data sets." This approach has grown out of our innate ability as human beings to detect patterns in the natural flow and change of events. Humans are capable of recognizing many first-order patterns naturally, using our "wired-in" abilities to see patterns automatically. However, computer systems, using data mining software, reveal more complex second-order patterns that are "invisible" to us on our own.

For example, look at the list of letters depicted below.

A E F H I K L M N T

What's the next letter in the sequence? (Take a few moments to try and see the pattern.)

As you look for the pattern, your brain works its way through a series of "already known" patterns, searching for the one which will reveal the answer. For instance, you might consider: Is the next letter a vowel? Is

it a consonant? Is there a pattern driven by the number of letters omitted in the sequence? Do the letters spell something? The point of this exercise is to demonstrate that your "pattern detectors" go to work automatically to solve the problem in front of you.

The answer to the question is the letter "V." Why? Because all of the letters presented are made of straight lines, and "V" is the next letter in the alphabet made of straight lines.

When this problem is presented to a group, only about 5 percent of the participants see this pattern. That's because, for most of us, letters are used to represent something. Rarely do we look at letters as figures in and of themselves.

Our ability to recognize and understand certain patterns is affected by our individual perception, or "paradigm." Paradigms affect our point of view, and affect how we recognize, judge and understand the world around us. Paradigms are formed by our learning experiences throughout life.

Each person's paradigm is different, and

thus a bit flawed. Since we filter what we see, hear, touch, taste and smell through our own paradigms, each human experiences the world a bit differently. This is where data mining comes in, since it is through this technology that we can remove our paradigms from the analysis process and see the world as it really is.

The purpose of data mining, then, is to change the way we see our world, or bring to our attention some facet of our world that was not apparent to us naturally. In the business world, data mining is used to gain a tactical advantage. For private clubs, such an advantage could take many forms: gaining a better understanding of what our members really want and value, competing more effectively with nearby clubs and public facilities, identifying sub-groups of members who share like interests that were previously unrecognized, or predicting in advance which members are most likely to consider resigning their memberships.

Most clubs have a huge amount of data stored within their computer systems: demo-



graphics on members and dependents, member purchase histories in food and beverage, golf, tennis, and other departments; survey information on member interests, areas visited on the club's Web site, and more. The problem most clubs experience is not in gathering the data, but in extracting it in a way that reveals important patterns and trends. This process of extraction, analysis and understanding is the foundation of good data mining.

There are five different levels of data mining. Each level offers a distinct type of information that can benefit clubs. The five levels are:

1. Classification
2. Estimation
3. Predication
4. Affinity Grouping
5. Clustering

A discussion of each level follows.

Classification

Classification represents both the simplest level of data mining—and the most important. Essentially, classification involves the examination of an object (data element) and the assignment of that object to a predefined class. A common club example of classification is the use of membership types. Each member is assigned to one class from a limited list of already-known classes, and each member can only be assigned to one class (even though a few clubs do assign members to more than one class).

Private clubs utilize a number of different classifications to define their members: member class (e.g., full, social, junior), resident/nonresident, member of the men's and ladies golf associations, member of the board of directors or club committees, gender, members with children, members with specific interests, and so on. Each of these classifications help to define individual club members, as well as the club's overall membership.

What's the value of classification? First of all, it simplifies communications with members who have certain things in common. Billing all golfers their handicap fee is made easier by grouping them together as golf members. Sending a letter to potential swim team members is made easier by grouping all members with children between the ages

of X and Y. Sending an e-mail to members who might be interested in a theater outing is made more meaningful by grouping together all members who have previously attended theater events.

Software designed for private clubs is loaded with classification features because clubs use classifications for a myriad of tasks. Most are routine jobs similar to the examples just given—billing, mailings, blast e-mails, and other forms of communication.

But classification can also be used to perform sophisticated analysis tasks on member behavior. Member spending analysis comes to mind. Most clubs produce computer-generated reports that show how (and sometimes where) members spend their dollars at the club. First, the club defines its spending classes (dining food, dining beverage, club events food and beverage, golf/tennis merchandise, guest rooms, private parties, and so on). Then reports are generated which reflect the amount spent by each member in each of these previously defined classes. Further analysis can be achieved by sorting the data by a second set of classifications, such as member type, resident/nonresident, age range, the length of time they've been a member, and so forth.

Classification is the data mining workhorse for clubs, even though it's the least sophisticated level of data mining available. Today's club software offers users wide discretion in their definition of classifications. Plus, advanced solutions allow users to execute complex analytical reporting by "slicing and dicing" on any and all elements of the club's database. These report-writing tools are the most powerful form of classification data mining, and offer great value to the private club industry.

But there's more. Much more.

Estimation

Estimation is the process of using data to come up with an unknown variable. A common example of estimation is determining the fair market value of real estate. For example, when a home is put on the market for sale, "comparables" are run to gain information on recent sales of homes that are similar to the target home. The analysis might consider variables such as number of bedrooms, square footage, lot size, neighborhood, proximity to schools, age of home, amenities (pool, fence,

ing, appliances) and so forth. The analysis is intended to provide the seller with a realistic idea of the target home's fair market value.

A common club-related example of classification might be estimating how many members will respond to a particular event invitation. Based upon past attendance at similar events, and information on member interests and preferences, estimation can predict the number of members who are likely to be interested in a particular event. Such an analysis could be quite helpful in event planning, and could focus the club's event-marketing efforts on those events most likely to be well-attended.

Prediction

Prediction is the same as estimation—with a twist. Prediction provides an estimation that can be verified. For example, prediction can identify which specific members are most likely to respond to a particular event invitation (not just how many, as with estimation). This level of specificity can be powerful. Consider the value of predicting which members are most likely to resign their membership in the next six months!

Affinity Grouping

Affinity grouping is the process of determining which things go together. A common example is found on Internet retail sites. Often, when you purchase a product online, the site will suggest other "related" items that may interest you. This cross-selling technique is very effective, and has increased online sales volumes significantly. Clubs might use affinity grouping to invite members to attend a certain event that is similar to previous events attended by those same members.

Clustering

Cluster analysis is different from all other forms of data mining, because it does not depend on previously defined classes to form judgments. Clustering divides a diverse group (a club's members) into a number of more similar subgroups or clusters—automatically. The data records are grouped together on the basis of "self-similarity." It's then left to the data miner to determine what meaning, if any, to attach to the resulting clusters. Clubs might use clustering to identify certain subgroups of members not previously classified, and then



establish events or amenities that are attractive to those subgroups.

Use of Data Mining in Private Clubs

Simply put, data mining is designed to lower costs, increase revenue, and improve customer satisfaction. Many industries use data mining with great success, and point to this technology as a major contributor to improved profitability and customer service. But why isn't this technology more widely used by the club industry?

The answer seems to be that until quite recently, data mining just hasn't been a priority for most private clubs. Software vendors serving the industry haven't emphasized it. Data mining specialists serving other industries haven't offered it to clubs. And most importantly, only a handful of clubs have demanded it. Why?

Let's start with the club software vendors, who mainly offer data mining tools that handle classification tasks. Although classification is the most rudimentary level

of data mining, it is also the most important. Three items are needed to perform classification tasks:

1. **A relational database.** All of the newer Windows-based club management software solutions offer the needed database. We estimate that 70 percent of all private clubs now have a Windows-based solution.
2. **A robust ad hoc reporting application.** Again, the newer solutions generally include such a reporting tool.
3. **An understanding of how to use data mining tools.** We estimate that fewer than 10 percent of all private clubs have anyone on staff proficient in using data mining tools. Most clubs report that they have received no training from their vendor on this important tool. Others report that they had to seek training from an independent local source.

Just as important, most clubs do not have an individual designated as the data mining expert. Sure, some bright person in ad-

ministration might take on the challenge to learn and use the tools on their own, but data mining isn't recognized in most clubs as a required skill that must be mastered by at least one employee. The result? The club's database goes unmined.

How to Maximize Your Club's Use of Data Mining

Start by making sure you have software solutions that are based upon a strong relational database with a good reporting tool. Then add a staff person with previous database management experience. Most clubs are not likely to have an existing staff member who will be up to the task of learning database theory, designing data mining queries, and executing the needed reporting.

This does not necessarily mean that your club must add a new position. Instead, when a staff member leaves and the club recruits a replacement, look for candidates that have these requisite skills. The new person would be responsible for

the replaced tasks as well as the data mining chores, which for most clubs, can be accomplished in 10 to 20 hours per month.

What About the Higher Levels of Data Mining?

If you want to utilize estimation, prediction, affinity grouping and clustering—the four higher levels of data mining—your club will need to look outside of the club industry for assistance. Fortunately, there are plenty of high-level data mining products available to choose from—and lots of consulting firms to help out. Here's what would be needed to make this happen:

1. Your club would enter into a service agreement with a data mining provider.
2. You would export your club's database to the provider, probably on a monthly basis.
3. The provider would host the data mining tool and data. (No need to purchase the data mining tools, which can cost upwards of \$250,000.)
4. You would design standard, pre-set reports, which would be delivered by the miner on a regular basis.
5. You could request special ad hoc reports as needed.

Sounds pretty straightforward, right? Wrong. To our knowledge, there are no existing data mining relationships in the private club industry. (That's not quite true—We've heard rumors that one or two clubs are using outside data mining companies, but so far we have been unable to confirm these relationships.)

What's a Club to Do?

There are two ways for your club to acquire higher data mining functionality:

1. **Have your club software vendor fund a data mining project.** Unfortunately, we believe that this approach isn't very practical, based upon recent discussions with executives from the leading providers. In a nutshell, providers are waiting for significant demand from their customers to initiate such a project. Since the industry as a whole isn't clamoring for more sophisticated data mining tools yet, it could be a while before vendors have anything significant to offer.
2. **Organize a group of clubs—using the same core application software—to fund**

an independent data mining project.

In our opinion, this approach could be a winner. It would require about a half dozen clubs to get together and make it happen—without assistance from their club software provider. The key here is that all of the clubs must have the same club software applications, so the data mining routines that are developed can be executed on the same basic data structures.

What might such an arrangement cost? Based upon a recent review of similar arrangements in other industries, we estimate that the clubs would split a \$10,000 to \$20,000 up-front development cost, and then pay \$500 to \$1,000 a month each for their own data mining reports, plus an hourly fee for custom reports. The reports would be available on the provider's Web site, or in PDF format.

Conclusions

Data mining is a potentially valuable management information tool for the private club industry. While this technology is readily available in other industries, it is not yet widely used in private clubs (except at the classification level). The major club software providers are not expected to offer advanced data mining technology in the short term.

However, clubs that have a clear need and can justify the up-front and reporting costs could band together to fund an independent data mining project with a qualified third-party provider. Such an arrangement could be reasonably priced if the agreement is properly structured and enough clubs participate. In the meantime, clubs can

still reap considerable benefits from classification data mining by using their Windows-based club management solutions and adding database expertise to the club's staff.

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