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**IBM Limited Edition**

# **Customer Analytics**

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## **Learn to:**

- Acquire new customers
- Grow customer lifetime value
- Retain customers at risk of defection
- Enhance customer loyalty and advocacy



**Stephanie Diamond  
Marygrace Bateman**



*Customer*  
*Analytics*

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***IBM Limited Edition***

by Stephanie Diamond  
and Marygrace Bateman

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## **Customer Analytics For Dummies® IBM Limited Edition**

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# Table of Contents

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<b>Introduction .....</b>	<b>1</b>
<b>Chapter 1: Understanding Customer Analytics .....</b>	<b>3</b>
Handling Big Data Problems .....	4
Mining Data for Insights .....	8
Visualizing Your Results .....	9
<b>Chapter 2: Acquiring and Segmenting Valuable Customers .....</b>	<b>11</b>
Acquiring the Ideal Customer .....	12
Using Segmentation Techniques.....	14
Identifying Customer Preferences through Micro Segmentation .....	15
<b>Chapter 3: Recognizing Customer Lifetime Value .....</b>	<b>17</b>
Defining CLV .....	17
Looking at Best Practices for CLV .....	18
Getting Started with Predictive Modeling.....	21
Personalizing Cross-Sells and Upsells .....	25
<b>Chapter 4: Enhancing Customer Loyalty and Retention .....</b>	<b>27</b>
Coping with Customer Churn.....	28
Increasing Customer Retention.....	28
Operationalizing Analytics to Make Better Decisions.....	29
Growing Customer Loyalty and Advocacy .....	31
<b>Chapter 5: Extracting Value Out of Social Media .....</b>	<b>33</b>
Seeing Social Analytics in Action .....	34
Employing Sentiment Analysis .....	35
Incorporating All Data Types .....	37
<b>Chapter 6: Ten Key Ways to Get Started with Customer Analytics .....</b>	<b>39</b>
Start with the Strategic End in Mind.....	39
Ask the Right Questions.....	40
Clarify Your Objectives .....	40
Choose Your Success Metrics .....	40
Secure Leadership and IT Buy-in Before You Start .....	41
Get the Right People for the Job .....	42
Evaluate Your Data .....	43
Pick the Right Tools to Complete the Project .....	43
Develop Your Analytics Plan .....	44
Execute! .....	44

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# Introduction

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**C**ustomer analytics is a process by which data can be turned into predictive insights to acquire customers, grow lifetime value, retain customers at risk of walking away, and enhance customer loyalty and advocacy. But because 90 percent of the data in the world has been created in the last two years, capturing it, analyzing it, and acting on it to get closer to your customers can sound like an overwhelming concept. With recent advances in technology, however, sophisticated yet easy-to-use analytic tools are now available for both large and small companies to collect and analyze the data they have to make solid predictions regarding customer behavior. As a result, customer analytics is no longer the daunting concept it used to be. And for businesses looking for a competitive edge, it's no longer a nice-to-have. It's a necessity.

The Internet has brought changes to almost every business process. One of the most significant changes is the role that customers play in controlling the message. They aren't the captive audience they once were to the traditional marketing messages that showed them what to buy and how to buy it — they can do it themselves, when they want and where they want. This means that marketers need a way to leverage the customer data they have and make it useful. But in this new big data era, it's becoming increasingly difficult to grasp what data is important and what isn't.

What exactly is big data, you ask? While it's structured data, as in the form of customer records or transactional history, it's more often unstructured data, like sensors used to gather climate information, posts to social media sites, digital pictures and videos, and cellphone GPS signals (just to name a few). And it's coming at you faster than ever.

Get this . . . people create 2.5 quintillion bytes of data every day. What's a quintillion? It comes after quadrillion, which comes after trillion. And it has 19 zeros attached to it! Those who make the effort to mine that data are distinguishing themselves from the competition. Customer analytics, powered by

predictive analytics, captures and aligns disparate data, anticipates what the customer is likely to do next, and puts it into action.

## About This Book

In this book, you take a look at the concepts for getting started with customer analytics and the specific techniques you can employ to enhance relationships with customers, increase revenue, and ultimately, make your organization more competitive.

*Customer Analytics For Dummies*, IBM Limited Edition, also gives you a perspective about how big data can be transformed from a never-ending supply of information into a set of predictions that can positively impact your bottom line.

## Icons Used in This Book

This book is written with the intention to provide basic yet key information about customer analytics. To help ensure that this is the case, the following icons are used:



If you see this icon on the page, it's a spot in the content where something can be made easier or quicker for you.



This icon represents information you want to remember. Hopefully, when you're reaching into your memory bank, this information comes to the surface.



This is information that you may find interesting if you like to know more of the technical details.



These warnings alert you to the things that you must watch out for to avoid any harm to your work or yourself.

## Chapter 1

---

# Understanding Customer Analytics

### *In This Chapter*

---

- ▶ Recognizing issues with big data
  - ▶ Optimizing your marketing efforts
  - ▶ Realizing the power of visuals
- 

The era of big data is here! Organizations are swimming in it, which presents both an opportunity and a challenge. Companies have the opportunity to enhance their customer relationships and increase revenues by analyzing data to predict customer behavior. Their challenge is to figure out what data is useful and what can be ignored — that's where customer analytics comes in.

*Customer analytics* is a method of turning data into deep insights to predict customer behavior. It helps you determine how to segment your data, uncover hidden patterns, and optimize decision-making throughout your organization. This includes turning data into predictive insights to

- ✓ **Acquire customers:** Find your ideal customers. These people recognize your value and utilize your products or services to the fullest.
- ✓ **Grow revenue:** Most businesses have growth as one of their top five goals. With the right customer analytics solution, you can expand your reach, increase profits, and determine the right upsell and cross-sell offers for your customers.

- ✓ **Maintain loyal customers:** Retain the customers you have and spend less money trying to prevent churn, which refers to the defection, constant loss, and short-term return of customers.

In this chapter, you look at big data and the issues surrounding it.

## *Handling Big Data Problems*

Big data has changed marketing forever because organizations are struggling to make sense of the enormous amount of data they're amassing every day. What do you do with 12 terabytes of daily tweets or how do you analyze 500 million daily call detail records? Turning data into a competitive advantage starts with moving toward a data-driven culture. Through customer analytics, organizations spend less time sifting through data in marketing automation systems and siloed sales revenue spreadsheets and more time acting on the hidden patterns and associations found within that data.

## *Recognizing the four Vs*

Today marketers can find the kind of information they need to make important decisions. Online customers are weighing in on everything from the cost of an expensive dessert to the color of their favorite t-shirt. They make recommendations and don't hesitate to share a negative or positive opinion with anyone who's interested.

This content usually comes in the form of unstructured data, such as customer videos and social media posts. If you can make sense of it, it can be valuable. But making sense of it requires understanding the four Vs of big data:

- ✓ **Volume:** With the ever-increasing availability of data, getting a handle on gathering and segmenting is difficult. Ninety percent of the data in the world today has been created in the last two years, and it's projected to increase 50 times in the next decade.

**✓ Variety:** Data is available in a variety of formats

- **Structured:** Data that can be classified and put into rows and columns like in a database. An example would be a customer transaction.
  - **Unstructured:** Data that can include video, voice, and free form text. These require complex analysis to make sense of the information. About 80 percent of the data now available is unstructured data.
- ✓ **Velocity:** Data is generated at an ever-accelerating rate and should be analyzed in as close to real time as possible to extract its value. For example, when dealing with unsatisfied customers, time is crucial when delivering the optimal, targeted retention offer to keep them from defecting to a competitor.
- ✓ **Veracity:** Leaders need to be able to make predictions about data and be aware of the inevitable uncertainty that exists with all forms of data.



Audit your data to make it more manageable. Veracity can mean you have multiple customer IDs in your system, each with a slightly differently spelled name perhaps, but they're in fact the same customer. Are you sending out multiple offers to this one customer? With customer analytics, you can resolve identity conflicts by uncovering like entities within multiple records, ultimately increasing the efficiency of your marketing campaigns (and not bothering your customers with the same offer multiple times).

## Evaluating and being evaluated

When evaluating customer analytics solutions, make sure you have a tool that can tackle big data's challenges with an open platform that both the line of business user and the analyst can utilize. A primary requirement is the need to be able to track and trend what you're doing to understand what has happened, what's happening, and what's going to happen.



When you evaluate customer analytics solutions, look to leverage the following

- ✓ Several modes of statistical analysis to segment your customers and perform what-if analysis
- ✓ An array of data mining algorithms to find hidden patterns and associations within customer data
- ✓ Scoring individual customers on their propensity to respond, purchase, or churn
- ✓ Text analytics to leverage unstructured data, like social media, into your analysis
- ✓ Planning and reporting tools to assess the impact of your marketing campaigns
- ✓ Ability to determine the next best action to empower optimal decision-making at the point of impact

The second issue is being able to maximize the organization's efforts, which are judged on a variety of measures. These measures include an increase in the following:

- ✓ **Revenue:** Are you meeting revenue goals in the current quarter?
- ✓ **Conversion rates:** Have conversion rates improved significantly over the past year?
- ✓ **Satisfaction KPIs:** What are your customers talking about? Are they satisfied? Why (or more importantly, why not)?
- ✓ **Return on investment (ROI):** Are you getting a significant ROI from your marketing campaigns?
- ✓ **Pipeline:** Are your prospects progressing through the pipeline?

Managers face these questions when preparing for their own department evaluations. Ask yourself how you gauge success. In a 2011 study by IBM, CMOs cited Return on Marketing Investment as their #1 gauge of success.

## *Creating a relationship with customers*

Regardless of your efforts, you are creating a "customer relationship." The question is "What kind of relationship will that be?" The trick is to manage that relationship in a way that

produces a positive feeling for both sides. What's needed is a program that allows you to predict how and when to meet your customers' needs. To do this, you need to know their preferences, behavior, and attitudes.

After you determine this information, apply this knowledge to every part of your organization including Sales, Marketing, and Customer Service. This creates a culture that puts customers at the forefront of everything you do. Leverage customer analytics to help you

- ✓ Acquire valuable customers
- ✓ Grow customer lifetime value
- ✓ Retain customers at risk of defecting
- ✓ Grow customer loyalty and advocacy

Figure 1-1 shows you how this cycle works.

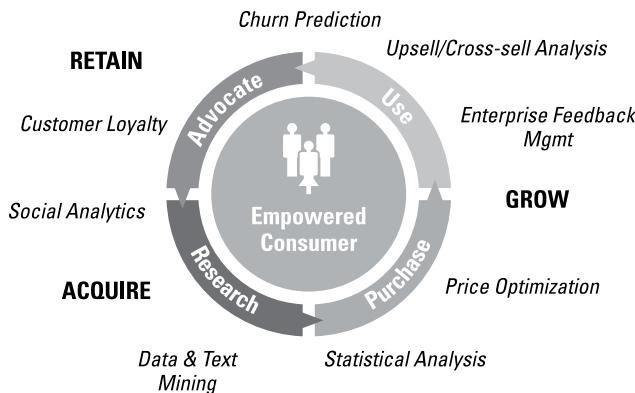


Figure 1-1: Acquire, grow, and retain customers.



To get a 360° view of your customer, you should have four different types of data:

- ✓ **Descriptive:** Attributes, characteristics, self-declared info, and demographics
- ✓ **Behavioral:** Orders, transactions, payment history, call logs, and usage history

- ✓ **Interaction:** E-mail and chat transcripts, web click streams, and in-person dialogues
- ✓ **Attitudinal:** Opinions, preferences, needs, and desires often found in survey responses or social media data

## Mining Data for Insights

*Data mining* is the ability to find hidden patterns and associations within data to predict behavior. Marketers use data mining to accomplish such things as grouping customers with similar attributes together, optimizing marketing efforts, handling service issues, and evaluating brand awareness. You can analyze the data using one or more of the following techniques:

- ✓ **Classification algorithms:** Identify attributes causing something to occur (for example, cascading attributes of defection behavior). Use this to build alerts for call centers to take corrective action on customers identified as at risk for going to a competitor.
- ✓ **Association algorithms:** Discover associations, links, or sequences in your data (for example, identify items likely to be purchased together). Use this to build campaigns and promotions that combine items offered or provide recommendations for purchase.

When offering items that are often purchased together, consider discounting one item and not the other. You'll increase your average sale.

- ✓ **Segmentation algorithms:** Group like data or uncover patterns in your data (for example, identify those likely to respond to a marketing campaign). Use this to reduce the number of people you market to by selecting only those most likely to respond. This process reduces your opt-out rate and increases your return on marketing investment.



An *algorithm* is a set of heuristics and calculations for solving a mathematical problem in a defined number of steps. In the case of customer analytics, it's a formula used by the software program for analyzing data to predict customer behavior. Figure 1-2 shows you what an algorithm looks like without software:

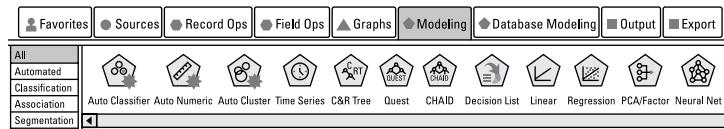


$$R(T) = \sum_{j=k}^n C_j^n e^{-\lambda T_j} (1 - e^{-\lambda T})^{n-j} \Rightarrow MTTF = \mu$$

$$= \int_0^\infty R(T) dt = \sum_{j=k}^n C_j^n \int_0^\infty e^{-\lambda T_j} (1 - e^{-\lambda T})^{n-j} dt = \frac{1}{\lambda} \sum_{j=k}^n \frac{1}{j}$$

**Figure 1-2:** An algorithm example without the use of software.

Figure 1-3 shows what algorithms look like with software.

**Figure 1-3:** An algorithm example in software format.

Not an analyst? Leverage a customer analytics solution that automatically runs through all the algorithms, displaying the top results based on the data you've provided.

## Visualizing Your Results

Organizations need to make decisions — and fast. Transforming the predictive insights gained through data mining into consumable visuals is critical for key decision-makers to understand, report, and share information quickly and efficiently.

Fortunately, technology has made significant strides in the area of visual presentation of data. It helps in sharing the results with key stakeholders, enabling them to rapidly move beyond just figuring out what the data shows to be able to make decisions and take actions. Business Intelligence (BI) is essential because it allows you to quickly see

- ✓ Underlying reasons for actions
- ✓ Relationships between data
- ✓ What-if situations in real time

Types of visual tools include the following:

- ✓ **Dashboards:** Dashboards help you understand complex data quickly. From one dashboard screen you get the big picture and the details. They help you personalize and format information so historical data can be evaluated. Through the use of dashboards, you can visualize your data and recognize patterns.

They also allow you to not only see what's going on from a big-picture level but also to dig into details and drill down into various aspects of your data. For example, you can not only see what's going on in a region, but also you can drill down into the detail for each zip code within that region. It allows you to not just see a multi-state territory but each city in each state in that territory.

- ✓ **Custom reporting:** The key to effective reports is the use of a variety of visual formats that aid understanding. You can get really specific. Custom reporting can also be built out with categorical displays such as specific colors for certain KPIs such as a marker that turns red if call waiting times in a call center are exceeding a certain length. These reports can be placed in the dashboard or be sent as interactive documents.
- ✓ **Simulations:** Visual tools can display what-if scenarios that help you make decisions quicker and with better results. Marketers can try out the use of certain levers, such as "what happens if I decrease my cost per lead by 5 percent" to help direct changes in their marketing.

## **Chapter 2**

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# **Acquiring and Segmenting Valuable Customers**

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### ***In This Chapter***

- ▶ Managing high marketing costs
  - ▶ Finding the right customers
  - ▶ Understanding different segmentation techniques
- 

**A**cquiring new customers takes more than following a gut feel or a guess. You need to provide the insight or the tactical information that turns a browser into a satisfied customer by solving a business problem or fitting a need she has. It takes the right offer presented at the right time through the right channel . . . and that generally takes money, which must be spent as efficiently as possible.

It is five times more costly to acquire a new customer than to sell more to current customers. How much are you spending on an average marketing campaign? Instead of sending out offers to 100 percent of your customers, what if you sent a targeted offer to 30 percent (those with the highest propensity to respond)? Your response rate would be much higher, costs much lower, and customer satisfaction increased.



In this chapter, you take a look at some of the ways to group data to best understand what a customer wants.

## Acquiring the Ideal Customer

The days of “spray and pray marketing” — sending every offer to every potential customer in your marketing database — are gone. That campaign approach is too expensive and too inefficient. It also quickly reduces the size of your marketable database as customers and prospects opt out of receiving your messages.

Understanding your current customers gives you a profound competitive advantage when acquiring new ones. By knowing the attributes of your high-value customers in particular, you can focus your efforts on acquiring prospects with similar characteristics.

To acquire the ideal customer, consider taking the following actions:

- ✓ **Understand the attributes of your current high-value customers.** Of course valuable customers spend money with you, but often they have other important factors: Do they drain your resources by constantly calling customer service? Do they have a strong sphere of influence in social media? Do they speak about you positively or negatively? Understand who your “ideal” customers are to create a customer profile that’s used to attract more just like them.
- ✓ **Facilitate progression through the marketing pipeline.** Leverage interactional data, such as an opt-in for a mailing list or web click-stream data, to determine where the prospects are in the buying cycle (are they just researching, or are they ready to make a purchase?) and deliver the appropriate offer to encourage them to learn more, while enhancing your relationship with them.
- ✓ **Develop personas based on the characteristics of segments of your customers.** Through statistical analysis and data mining, you can uncover discrete segments within your customers and prospects. Based on those segments, you can build descriptive personas that your

marketing team can use to develop more effective marketing offers.

- ✓ **Execute a marketing strategy for each individual.** You can no longer do a mass mailing and hope to reach the right customers with the appropriate message. By scoring each individual customer on his propensity to respond and which channel would be most effective to yield a response, your response rates will be higher and customer satisfaction will increase.
- ✓ **Compare the effectiveness of campaigns.** You can't just declare campaigns a success without measuring them. A way to measure the impact of your marketing campaigns is by calculating Return on Marketing Investment (ROMI). This measure looks at the total number of net marketing dollars divided by the amount that you spend.



You don't want to irritate your customers by sending them offers they wouldn't be interested in again and again. Or even worse, sending them an offer for a product they already own or a service they already subscribe to. Offer overload can diminish brand loyalty . . . and it's expensive.

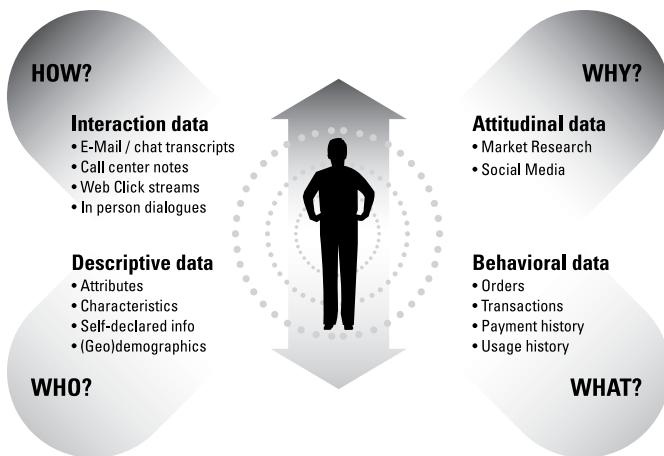
Before you move into any data analysis, you need to understand what kind of data you already have and how you acquired it. For example, have you gotten e-mail addresses when people signed up for your newsletter? Do you have detailed information from when customers registered a product — has that data been merged? Was this data acquired a long time ago, or is it current? Are the e-mail addresses still working? Answers to these questions help you put together data sets you can analyze.



You can leverage the following types of data in your analysis:

- ✓ Descriptive data, such as demographics
- ✓ Behavioral data, such as transactional history
- ✓ Interaction data, such as web click streams
- ✓ Attitudinal data, such as social media

Descriptive and behavioral data are good ways to begin segmenting your customer base to uncover behaviors of certain groups. But in order to get a true 360° view of your customer, incorporating interaction and attitudinal data is crucial. Check out Figure 2-1 for how these data types interact.



**Figure 2-1:** The four rungs of data for analysis.

## Using Segmentation Techniques

A good first step when segmenting your customers is to start with readily accessible data, such as descriptive data and behavioral data. One easy technique to segment your customers based on available data is RFM (recency, Frequency, monetary value) analysis. You score your customers on a 1–5 scale based on

- ✓ **Recency:** How recently did he purchase? (“1” can be 5 years ago; “5” can be 5 days ago)
- ✓ **Frequency:** How frequently does he visit? (“1” can be 0 times a month; “5” can be 5 times a month)
- ✓ **Monetary:** What’s the average monetary value spend? (“1” can be \$0; “5” can be \$500)

By using this technique, you can create two kinds of RFM scores:

- ✓ **A score that weights everything equally:** You don’t distinguish the value of one of the three measures from the other.

For example, if a customer is low on every measure, you could get a score like 1-1-1 or 111. If they’re high on the frequency score, you may get something like 1-5-1 or 151.

You then use this score to put the customer in order of customer value. You could then offer specific upsells.

- ✓ **A score that gives different weights to each of the variables:** You may believe that for your company the measures aren't equal in weight. In that case, you weight them in relation to one another. The results list then reflects that weighting.



The IBM CMO study found that the most-proactive CMOs are trying to understand individuals as well as markets. They're focusing on relationships, not just transactions.

## *Identifying Customer Preferences through Micro Segmentation*

In order to deliver personalized offers to your customers, it is necessary to move from segmenting groups to segmenting individuals. *Micro segmentation* identifies each individual customer's preferences, needs and behaviors. By personalizing your offers at this level, you can maximize your marketing campaign dollars and enhance your customer relationship.

To get down to the individual customer level, it's necessary to score *individual* customers. For example, say you performed RFM analysis and segmented a group of high-value customers that purchase frequently and spend a significant amount of money per visit; however, for some reason, they haven't purchased recently. You know you want to send them a targeted offer with a discount so they'll come back in the near future. But this group that you've segmented is just that, a group. Individuals within this group are likely to behave differently. Some may respond best to an e-mail offer, others to a direct-mail piece.



Neural networks and decision trees are two techniques that can be effectively applied in micro segmentation. *Neural networks* are able to uncover complex patterns in the types of customers and rank each customer based on a score, or likelihood, to respond to a specific offer. *Decision trees* build a very open and interpretable visual that show the patterns that were discovered.

For example, the decision tree algorithm in Figure 2-3 shows that within this group of high-value customers at a telecommunications company, a primary indicator of response propensity is if the customer has noted an improvement in service within the past 30 months. Drilling down deeper, we see another indicator is if the customer has noted improvement with a specific product.

By finding these hidden patterns and correlations within our customers' behaviors, consistently drilling down beyond group segments, and scoring individual customers, we are able to move from targeting groups to targeting individuals with personalized and relevant offers.

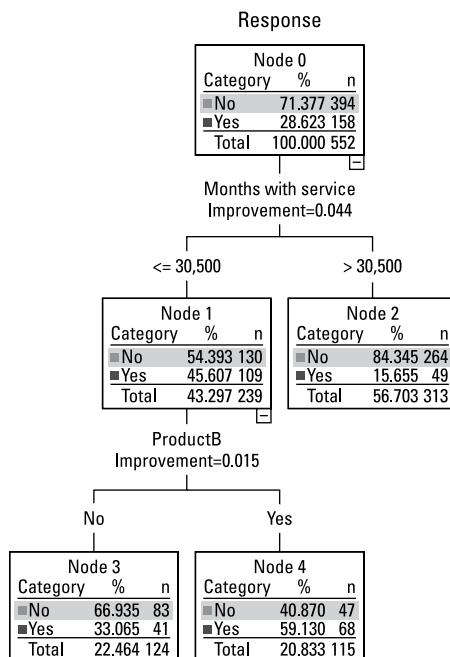


Figure 2-2: A decision tree algorithm.

---

## Chapter 3

# Recognizing Customer Lifetime Value

### *In This Chapter*

- ▶ Getting to customer lifetime value (CLV)
- ▶ Creating a predictive model for affinity analysis
- ▶ Reviewing the value of cross-sell and upsell

**S**ince it costs, on average, five times more to acquire a new customer than to keep an existing one, acquiring customers who are valuable over the course of their lifetime is crucial. To gauge this, organizations use something called a customer lifetime value (CLV) score.

In this chapter, you look at the benefit of knowing what customers are most significant to your company over the life of their relationship through measuring the costs of acquiring those customers, the revenue those customers bring in, and the influence that customers have on others to increase your brand recognition.



The best way to analyze customer needs is to look at all types of data: behavioral, attitudinal, descriptive, and interactional.

## *Defining CLV*

CLV is a tool used by marketers to measure the present value of the future profit from a customer. CLV is comprised of three key components:

- ✓ Customer acquisition costs
- ✓ Margin generated by the customer (annual profit contribution per customer minus annual retention cost per customer)
- ✓ Retention rate

As marketing has become more targeted and data-driven, a more dynamic approach to CLV analysis has emerged. It's no longer focused on the historical transactional history of a customer but instead on the future relationship that a company can have with that customer.

Calculating a CLV for each of your customers gives you the ability to

- ✓ Target campaigns to grow customer profitability
- ✓ Drive acquisition of new customers
- ✓ Identify customers who may defect
- ✓ Identify customers who are drains on internal resources
- ✓ Qualify in-bound sales leads

Utilizing CLV makes you a better marketer because you know how much you can actually spend to acquire or save a customer.

## *Looking at Best Practices for CLV*

When you're ready to get started evaluating CLV, this section gives you five best practices to follow.

### *Determine your acquisition allowance*

A majority of marketing revenue is devoted to customer acquisition. However, how much is too much? What channels

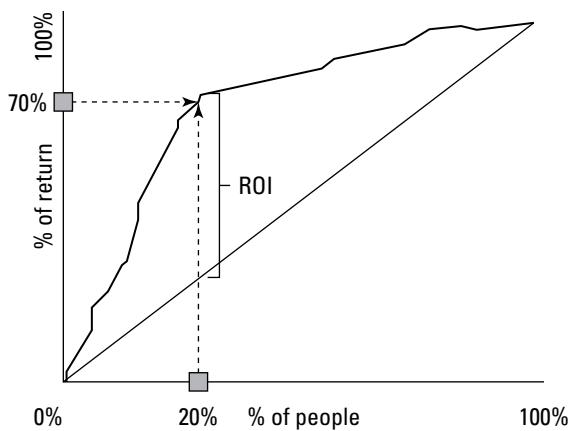
are more efficient? By determining your *acquisition allowance* — how much you can spend on acquiring a new customer — you can make better decisions on where to devote your marketing resources. Acquisition allowance is determined by using the net present value of the future stream of revenue, including assigning a percentage of the revenue from future promotions.



CLV and acquisition allowance have to be recalculated on a regular basis as the organization and customer behaviors change, as well as economic conditions.

## *Predict the best way to win the right customers*

Make sure that you focus on the high-value customers as opposed to the ones that are a drain on your profits. Perform a cost/benefit analysis like the one shown in Figure 3-1. You could send a standard offer to 100 percent of your customers in your database, or you could send targeted offers to the top 20 percent of your customers. By being more focused on your marketing efforts, you decrease costs and increase the ROI on your campaigns.



**Figure 3-1:** A sample cost/benefit analysis.

## *Predict the best way to grow customer relationships*

With customer analytics, you can time the right message to the right customer by using the right channel. This method is the most cost-effective way to spend marketing dollars to grow revenue. For example, by mapping customer behavior to the buying cycle, you can serve up an offer or content that matches the customer's buying stage and helps progress them through to a purchase.



Be sure to incorporate survey data and capture touch-point information. For example, asking one question at the close of each transaction can greatly enrich your understanding of behavior and preferences over time.

## *Predict the best way to keep the right customers longer*

Through anomaly detection algorithms, you can identify the behaviors that lead to defection so you can proactively reach those customers at risk of leaving with the right offer to make them stay. You can also identify those customers who are a drain on your resources so you can focus your efforts elsewhere.

## *Use predictive intelligence at every customer touch-point*

Create a touch-point audit of every department that touches your customers, including billing, customer service, compliance, and so on. Identify opportunities to collect key behavioral data at these touch points. At the same time, examine the message that the customers are receiving to ensure it aligns with their expectations.

# Getting Started with Predictive Modeling

CLV represents the value of the *future* relationship with an individual customer. Predictive modeling is a critical technique in anticipating future behaviors of individual customers.

To create a predictive model, the algorithm first analyzes the data, looking for specific patterns or trends. The algorithm then uses the results of this analysis to define the optimal parameters for creating the predictive model, which are applied across the entire data set to extract actionable patterns and detailed statistics.



An *algorithm* is a set of heuristics and calculations that creates a data mining model from data. That model is then used to predict what a customer is likely to do.

The predictive model that an algorithm creates from your data can take various forms, including

- ✓ A set of clusters that describes how the cases in a data-set are related, identifying which items are likely to be purchased together
- ✓ A decision tree that predicts an outcome and describes how different criteria affect that outcome, pinpointing the indicators that affect the propensity to respond, purchase, or defect

So what does this look like? In this example, you want to uncover what items are likely to be purchased together (often called *market basket analysis* or *affinity modeling*). You can use these steps to create your predictive model stream:

## 1. Choose data sources.

You can incorporate all types of data, both structured and unstructured, for your analysis. Figure 3-2 shows a data source that contains transactional data, called *baskets*.



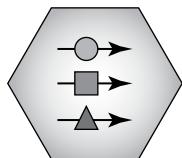
BASKETS1n

**Figure 3-2:** An example data source.

---

**2. Prepare the data, automatically extracting, transforming, and loading the data to ready it for analysis.**

By dragging and dropping a type node, shown in Figure 3-3, and attaching it to your data sources, you can prepare your data for analysis and identify your target variables.



type

**Figure 3-3:** A type node dropped to your workbench.

---

**3. Explore the data.**

Visualize through histograms, scatter plots, and association graphs to uncover patterns.



Before you run your model, it's helpful to understand which data fields are most relevant. For example, you may be pointing to 500 data fields in your model used to predict items most likely to be purchased together; however, only a handful may be indicators that actually predict customer behavior. Through the data exploration node shown in Figure 3-4, you see that there are correlations among 14 data fields, so those will be used in the model.



14 fields

**Figure 3-4:** A node showing 14 data fields.

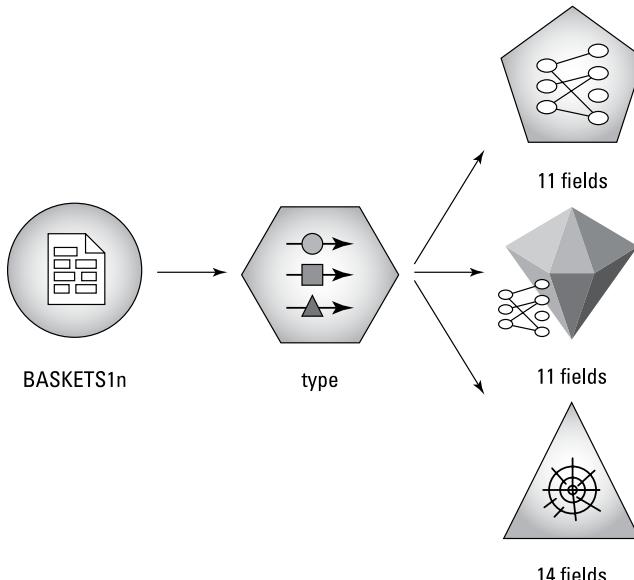
#### 4. Apply the necessary algorithms.

In this case, you apply association algorithms, such as Apriori, to identify items purchased together. If you're unsure which algorithm is most appropriate, let the software tell you which model is the best fit based on your data.



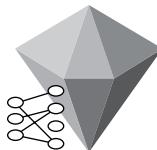
*Apriori* extracts a set of rules from the data. “If X was purchased, then Y was purchased” — pulling out the rules with the highest information content.

By dragging and dropping nodes onto canvas, you get an entire predictive modeling stream, shown in Figure 3-5.



**Figure 3-5:** The predictive modeling stream.

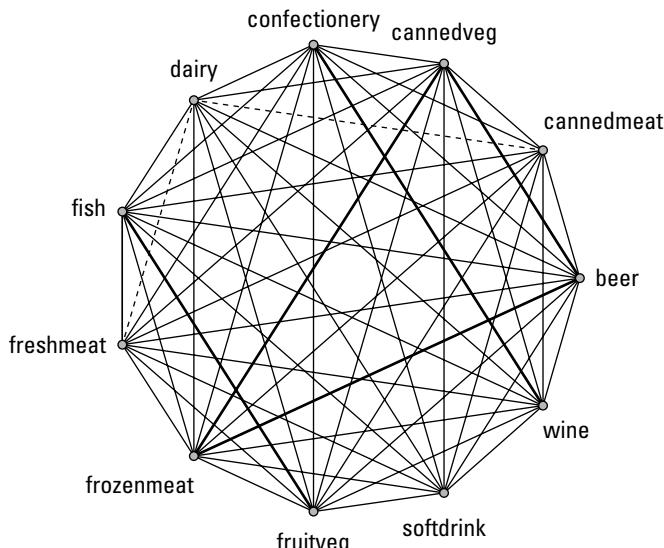
By running the predictive modeling stream, you generate a *golden nugget*: the predictive model, which in this case, identifies those items most likely to be purchased together. That model — the most important part of the process that your stream generated — is shown in Figure 3-6.



11 fields

**Figure 3-6:** The predictive model.

By exploring the correlations in the affinity analysis, you can uncover hidden patterns within the data. Take a look at Figure 3-7. What items are likely to be purchased together? The darker (thicker) the line, the stronger the relationship between the items. So, there's a strong relationship between frozen meat and beer, as well as between confectionery and wine.

**Figure 3-7:** The correlation between items bought together.

Equipped with this knowledge, you can

- ✓ **Understand customer preferences:** Stock and display items more effectively
- ✓ **Increase basket size:** More revenue per customer
- ✓ **Propose more effective offers:** Higher profit margins
- ✓ **Target offers to web shoppers on the fly:** Greater return on marketing spend

## *Personalizing Cross-Sells and Upsells*

One of the best ways to increase CLV is to offer ways for customers to buy more based on their behaviors and preferences. By making an offer when customers are at the point of sale, you reach them at the most opportune time.

There are several types of offers that predictive analytics can recommend. These include

- ✓ **Cross-sells:** Products that are often bought together
  - Offer example: Bundles that include products frequently purchased together or coupons that pair these products together
- ✓ **Upsells:** Adding additional features to an existing product or service
  - Offer example: Adding a premium warranty package to a product purchase

Incorporating unstructured data into your predictive models can help you further personalize your cross-sell and upsell offers, making them more attractive.

For example, add text from your product recommendation site into the predictive model. Applying sentiment analysis to your text, you find that consumers are happy with the new product but still dissatisfied with the price. Knowing this, you can offer a discounted bundle on this product, as well as a product that's often purchased in tandem (which you

discover through affinity analysis, discussed in the preceding section, “Getting Started with Predictive Modeling”). For more information on text analytics and sentiment analysis, check out Chapter 5.

Through customer analytics, you can obtain insights about the data and match consumer preferences and behavior to give the maximum return on marketing dollars. The patterns provide a way for retailers to differentiate their assortments and develop combined offers.

## Chapter 4

# Enhancing Customer Loyalty and Retention

### *In This Chapter*

- ▶ Understanding churn
- ▶ Focusing on retaining valuable customers
- ▶ Operationalizing analytics
- ▶ Enhancing loyalty and advocacy

**C**ustomers are actively seeking and finding their own product information. Previously, customers depended on the advice of a salesperson or on their limited personal network of friends and family. They can now find most of the information they need online without ever talking to a salesperson.

They can shop in the store, find the best price, discover coupons with their mobile device, and receive their products at their homes the next day — all without an organization's directed input. This puts more pressure on marketers to employ tactics that create loyal customers and decrease churn.

 *Churn* refers to the percentage of customers you lose in a given time period. Decreasing churn or attrition is a top focus in today's competitive climate; no one wants to lose customers to competitors.

## Coping with Customer Churn

Customer loyalty is hard to come by given the fluctuations in the economy, increasing competition from domestic and global companies, advances in social media, and a fickle customer base. The customer now drives the relationship and expects the organization to provide an authentic interaction, not a generalized “push” advertisement.

If a customer suspects that she’s not getting the service she deserves, she can tell her followers on social media platforms like Twitter and Facebook. Organizations need to monitor social media and be transparent about problems with their products. Losing a customer is significant because it has a direct impact on the bottom line. Just a small improvement in customer retention rates can yield a huge increase in profits.

But what actually goes into customer retention? It’s a combination of understanding customer needs and delivering offers that resonate. Without the right data, trained employees, and automated programs serving up the right offers, you’re fighting a losing battle.

The key is being proactive so you aren’t putting out fires and trying to save aggravated customers who may already be lost or customers that have a low value to your business. Let your competitors have the people that are resource drains at minimum profit levels. Customers have options to go elsewhere, and they will if they’re unsatisfied; that’s why it’s important to focus on the customer and not just on the product.

## Increasing Customer Retention

Increasing customer retention is all about being proactive instead of reactive. With customer analytics, you can

- ✓ Immediately spot small problems that could become large ones through anomaly detection

*Anomaly detection* identifies data points that are significantly different from the rest (in the case of churn, determining behaviors that fall outside of the desired norm).

- ✓ Target those customers at risk of defecting and score them on their propensity to churn

- ✓ Deliver a timely targeted retention offer to get customers back on track
- ✓ Track and report success of retention efforts

Customer analytics enables you to identify the customers who need attention and those who should be “managed out” without requiring staff to make that identification and decision.



Prioritize your retention efforts. For those high-value customers who are at risk of defecting, execute an outbound health check that matches up the appropriate call center representative to each individual customer’s needs.

## *Operationalizing Analytics to Make Better Decisions*

One of the most significant changes in consumer behavior in the Internet age has been the 24-hour nature of maintaining customer relationships. Online shopping fueled by social media interactions means it’s more important than ever for your organization to be prepared to react appropriately to each customer as an individual however you happen to be communicating: web, call center, social media, or mobile device. These interactions are all guided by the intersection of two main decision-making engines.

### *Predictive modeling*

Use analytics to help you determine the right customers to pursue and *how* to pursue them. You can learn what customers have a high-value potential or are likely to respond to a specific offer (free shipping, 10 percent off, and so on).

By applying customer analytics to your customer data, you can create a churn model and then visualize the output of the model in a table format, like the one shown in Figure 4-1. You see individual scores for customer IDs and their propensity to churn. The churn model tells you that customer 1876 is likely to leave, and it’s 96 percent confident of that outcome. You need to give that customer a targeted retention offer — and fast!

443	1876	0
444	1878	0
445	1882	0
446	1883	0
447	1884	0
448	1885	0
449	1886	0
450	1887	0
451	1889	1
452	1890	1
453	1891	0
454	1892	0
455	1893	0

Figure 4-1: A churn model.

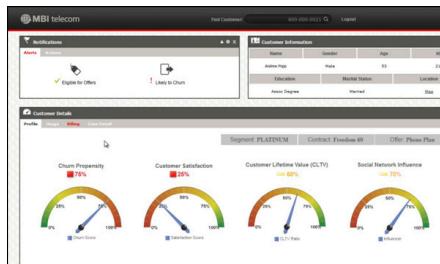
## Business rules

These rules keep the predictive model in check and ensure compliance. For example, if a person has already been contacted within the past two weeks, the business rule would say not to send them an offer. This person may have been scored by the predictive model as a good candidate to contact, but it's the business rules that are the company's own criteria of who should be contacted and how.

So what does embedding analytics into your operational systems look like? Take the churn model from the preceding section. The call center rep won't see the predictive model or the combination of business rules. Instead, she sees what she needs to see:

- ✓ The optimal decision to make at the point of impact
- ✓ How likely this individual is to churn
- ✓ What her CLV is
- ✓ What offer should be made to get her to stay

Figure 4-2 shows the call center representative's dashboard, which highlights this list.



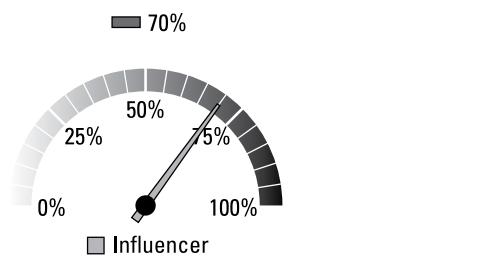
**Figure 4-2:** The call center rep's dashboard of information.

## Growing Customer Loyalty and Advocacy

Smarter organizations are realizing that some of the time they spend retaining customers could be better spent turning loyalists into advocates. They quickly realize that brand exposure is exponentially increased by building advocates. In the age of social media, these organizations focus on finding

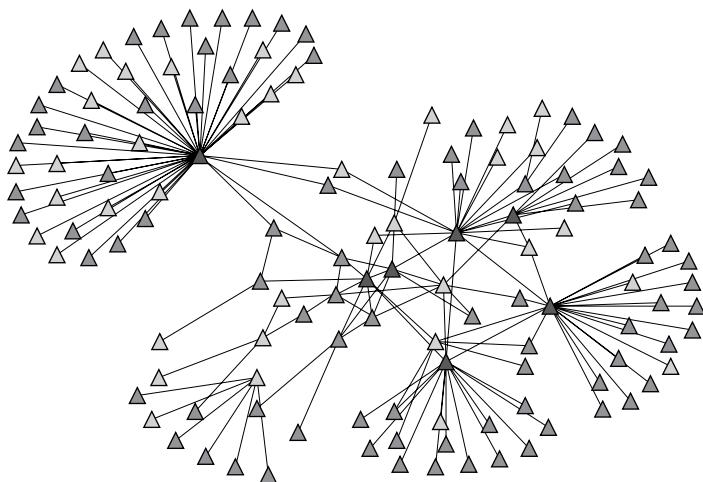
- ✓ Customers with high influence
- ✓ Patterns that identify influential behavior
- ✓ Members of a network that connect other influencers

The customer service representative can utilize a certain interface when delivering a retention offer. Her screen, shown in Figure 4-3, displays the dashboard, which shows the customer's Social Network Influence (SNI) score — that indicates the sphere of influence this individual has, based on either call records or social media presence.



**Figure 4-3:** The dashboard reflecting an SNI score.

The dashboard in Figure 4-3 was created through Social Network Analysis (SNA). SNA refers to the visual mapping of relationships between people to determine what part they play in the social sphere as shown in Figure 4-4.



**Figure 4-4:** The social sphere.

The value of SNA is that it can also uncover relationships and patterns that are difficult to see if they aren't mapped. For example, people may not contribute in a substantial way monetarily; however, they may wield significant power based on their relationships to influencers. After you've determined who these influencers are, you can target them for special treatment.



Customers are increasingly distrustful of traditional marketing messages and increasingly placing more and more trust on peer recommendations. Turning a satisfied customer into an advocate is key to enhancing brand and customer loyalty.

## **Chapter 5**

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# **Extracting Value Out of Social Media**

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### ***In This Chapter***

- ▶ Understanding social analytics
  - ▶ Analyzing customer sentiment
  - ▶ Incorporating all types of data into analysis
- 

**S**ocial media is a significant part of customer analytics because it's the prominent forum where customers are hanging out and chatting about products and services. And they aren't holding back. The good news is that with social media you can listen to customers directly. You can learn the words they use to describe your product and hear what they find useful. With this information, you can apply predictive techniques that allow you to target your message and media to the right customer.

The bad news is that everyone is talking at once. Almost all the data is unstructured, free-form text, and you've got more than you can handle. You know there's gold in what people are saying, but there's also a great deal of junk. How can you make social media manageable, actionable, and valuable?

That's where social analytics comes in. It captures and analyzes social data to help predict customer behavior and take effective action. Previously, the closest way to get this kind of data was with survey research or focus groups. With social media, the data can be richer and more meaningful because it's collected in an environment where people can say what they want to say.



Establish a social champion! According to a study by Forrester Research, less than one-fifth of organizations have designated an owner of their social media strategy. For social media data to be useful, it has to have a company advocate that shepherds its introduction into the organization.

## *Seeing Social Analytics in Action*

Social analytics pinpoints where your customers are talking about you and how they're sharing their opinions and needs. These conversations are taking place in online forums such as the following:

- ✓ **Customer reviews:** From online review sites like Yelp
- ✓ **Tweets and Facebook posts:** From friends, family, and one's social network, who give the most important recommendations
- ✓ **Product comments:** From retail sites that solicit product reviews
- ✓ **Blog posts:** From influencers in your industry who recommend to your customers
- ✓ **E-mail comments:** In response to product newsletters

Social analytics captures snippets of phrases or words that are being talked about and distills the massive amounts of unstructured data into manageable and relevant pieces of information. Equipped with this information, you can then identify the following:

- ✓ **Share of voice:** How much are you being talked about in comparison to your competitors?

Deep insights into customer behavior and sentiment can be captured and analyzed via social media analytics. The dashboard in Figure 5-1 highlights share of voice by gender, geography, and sentiment.



Figure 5-1: A share of voice dashboard example.

- ✓ **Consumer segments:** Who's talking about you? What demographic? Where do they live?
- ✓ **Hot words:** What are people talking about? What are the evolving topics and trends?
- ✓ **Websites:** Where are people talking about you?

Visualizing the analysis of this unstructured data into consumable dashboards is key to gaining quick and actionable insight into social media.

## Employing Sentiment Analysis

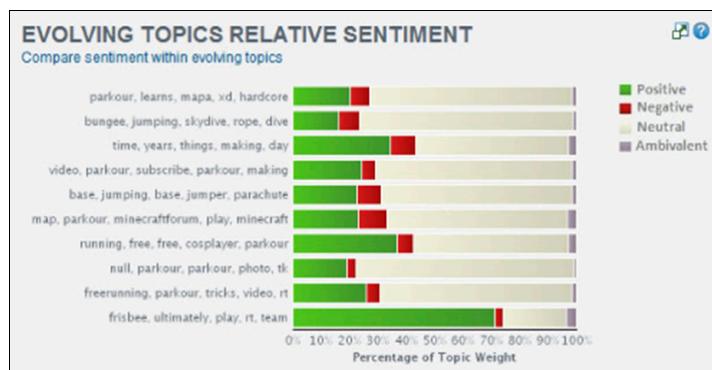
After you know who's talking about you, you need to know what they're talking about and, specifically, if they're talking about you in a positive, negative, neutral, or ambivalent way. That's where sentiment analysis comes into play. *Sentiment analysis* puts structure around unstructured data so you can key in on the sentiment behind concepts to gain true insight into customer attitudes and opinions.

By using sentiment analysis you can achieve the following:

- ✓ Optimize ROI by segmenting customer data with the added dimension of how the customers feel about your organization
- ✓ Respond to customer demand by understanding his “wants” before he’s entered into the buying process
- ✓ Predict customer needs so you can provide proactive service based on expressions of potential issues in customer postings
- ✓ Respond to an advertising campaign’s social reaction and determine how to make adjustments on the fly
- ✓ Find new segments by combining attitudinal data with survey data to refine marketing outreach

Figure 5-2 shows you an example of a sentiment analysis. By capturing key concepts in social media and performing sentiment analysis on them (in this case, concepts involving a bungee-jumping activity), you can visualize what items are being talked about in a positive, negative, neutral, or ambivalent way.

Through uncovering customer sentiment, you visualize, measure, and compare evolving topics that were difficult to pinpoint in the past. These can include brand sentiment, consumer satisfaction, and influencer impact.



**Figure 5-2:** A sentiment analysis involving bungee jumping.

## Incorporating All Data Types

A common mistake organizations make is treating social media as its own entity, usually in the confines of the marketing department, and they don't incorporate other data types along with social data. In these cases, social media data is often used only as a listening tool for organizations that just want to hear what customers are talking about.

In order to make social media data actionable, it needs to be incorporated with other data, like customer information in a CRM system, survey responses, web click-streams, and so on, so you can get to the granular, micro-segment level of each individual's preferences.

A key component in incorporating unstructured data into your predictive models is the application of text analytics. Text analytics uses natural language processing techniques to understand the context around what's being said.



Unstructured data doesn't only mean text. It can also take shape in images, such as emoticons. Be sure to incorporate these into your analysis as well.

Incorporating unstructured data into your analysis helps you understand what your customers are saying, and more importantly, the sentiment behind what they're saying. When you combine this type of data with other forms of customer data you can

- ✓ Gain deeper customer insights.
- ✓ Fully understand the value of your brand.
- ✓ Catch emerging trends to maximize profitability.

*Natural language processing* (NLP) is a field of computer science that involves a set of linguistic, statistical, and machine-learning techniques that allow text to be analyzed and key information to be extracted. Take a look at Figure 5-3, which applies NLP. The figure shows that *customer service* is one positive concept in #5 and *wait a long time* as one negative concept in #3.

	Customer_Service (12) –	Categories
1	If there was not a desired vehicle available the reps explored all options including competitors to assist in finding an available vehicle. This level of service brought me back not to their competitor but the company as this reflects on their overall quality.	Pos: Service: Accessibility/... Contx: Quality Neg: Product: Functioning
2	so wait for pick up and drop off was great, help with luggage, face to face directions to hotel, recommended entertainment for area.	Pos: No Plan to Change-W... Pos: Product: Information Pos: Service: Accessibility/...
3	Everyone was very helpful. The car was ready for me on time and I didn't have to wait a long time at the counter.	Pos: Service: Accessibility/... Pos: Service: Knowledge
4	Have not rented a car since last October. Customer Service was good, shuttle service was available to and from airport. Scheduled pickup was on time and they even found a package we had left in the car and brought it to the shuttle.	Pos: Service: General Neg: Product: Functioning Pos: Service: Accessibility/...
5	Customer Service was quick and friendly. I received my car with little hassles.	Pos: Service: Accessibility/... Pos: Service: Attitude

**Figure 5-3:** The computer science field example of NLP.

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The power of NLP is apparent when analyzing concepts that aren't as clear, such as understanding that *bat* can mean an animal in one situation, sports equipment in another, a verb in another, and so on.

## Chapter 6

# Ten Key Ways to Get Started with Customer Analytics

### *In This Chapter*

- ▶ Thinking strategically
- ▶ Planning with goals in mind
- ▶ Putting the right people on the job

If you don't know where you're going, any road can take you there, right? This could be the perfect motto for this chapter on getting started with customer analytics. In this chapter, you see the ten key ways to get started on your journey.

## *Start with the Strategic End in Mind*

Start your analytics project by defining what you want to achieve. What will have the biggest impact on your business? Is your organization focused on new customer acquisition and market share growth? Or is profitability per customer the driving force? Perhaps your biggest objective is to limit churn? Defining these objectives upfront and recognizing you can't do everything at once will give you the essential focus needed to start using customer analytics in the most effective way.



Take a breath and look at the big picture first. If you jump right into looking at your data before you know what you want

to accomplish, you'll get lost. Think strategically first, which sets the project up for success and possibly something that can be replicated across business functions.

## *Ask the Right Questions*

After you've defined your strategic end, work on defining the right questions. Asking a series of "why" questions, with each answer driving another why is an effective approach to getting to the issues that need analysis.

For example, let's say the business objective you want to focus on is customer churn. For example, "Why did this particular valuable customer churn?" If it is because of a bad customer service interaction, "Why was the interaction bad?" If it is because the representative wasn't equipped with the right information to give a relevant offer, "Why was she not able to deliver the offer?" The questions you ask upfront will narrow the root cause of the issues.

## *Clarify Your Objectives*

Make sure you've defined your objectives to be aligned with your strategic goals and remain focused on actionable items. It's easy to get lost in the weeds when you're confronted with masses of data and countless ways to look at data. Staying focused on the outcome and the questions you're working to answer help avoid "mission creep" that can interfere with a successful outcome.

The end of the project is where you need to keep focused on your objectives so you can make it a success. Narrowly focus your objectives — pick a problem that everyone agrees is critical to solve, is measurable, and is a relatively easy win. One good way to get started is to pick one problem from within a department. After you get a small win, you can execute elsewhere.

## *Choose Your Success Metrics*

Developing success metrics upfront ensures management buy-in. Managers need to justify their programs based on the

returns. When you can point to tangible success metrics, you help management justify the expense, both in dollars and in time commitment.

Don't be unrealistic about what's possible, and properly set expectations. Go back to your objectives and match them to the measures. For example, a successful metric may be to decrease churn by 10 percent. Of course, you'll want to decrease churn by 100 percent, but in order to be successful, you need to maintain realistic goals.



When developing your success metrics, follow these tips:

- ✓ **Define each success metric carefully.** Make sure you're clear on what success looks like. Give actual values and rates you want to achieve.
- ✓ **Specify dollar amounts.** Be clear about how much actual revenue would be realized by each metric chosen.
- ✓ **Total all the benefits.** Put a dollar figure to the revenue that would be realized if all your success metrics were reached.
- ✓ **Identify the stakeholder who will assess the true success of the project.** Make sure someone in upper management can declare the project a success. You don't want the project to be tainted by bias. It should be very clear whether the success metrics are met.

## *Secure Leadership and IT Buy-in Before You Start*

Every project stakeholder should know how his department can benefit if everyone puts in the necessary effort. Clearly you must secure buy-in from your two most important stakeholders: Management and IT.

Without leadership backing your project, you may have a hard time achieving your goals. This is also true of the IT department, which understands how everything in your business infrastructure fits together. If you believe some roadblocks to progress exist, open up dialogue between IT and management early on.

## What is CRISP-DM?

CRISP-DM is the acronym for Cross Industry Standard Process for Data Mining. This process helps focus data mining projects and provides the common language necessary for project stakeholders to communicate.

CRISP-DM breaks the process down into six phases:

- ✓ **Business understanding:** Plan to achieve business goals.
- ✓ **Data understanding:** Define data mining success.

- ✓ **Data preparation:** Collect and evaluate the data.
- ✓ **Modeling:** Develop the predictive models using analytics.
- ✓ **Evaluation:** Determine if your predictions are reliable.
- ✓ **Deployment:** Complete your project and continue to evaluate results.

Note that the first three steps of the process frequently take up to 90 percent of the time and effort, so proper attention to them is essential.

## *Get the Right People for the Job*

What makes people right for the project? Most important, they should have the same goals for the project that you do. Consulting with each participant is a good idea. Don't assume people understand the project the same way you do. Discuss it and make sure.

Possible roles to consider include the following:

- ✓ **Management sponsor:** This person makes sure that the project is supported, is funded, and the outcome is recognized.
- ✓ **Domain expert:** The domain expert is the one who has optimal business knowledge associated with the task at hand. They know the ins and the outs of the business problem, as they are the one being directly impacted.
- ✓ **Data miner/analyst:** This person(s) knows the data and understands the business goals. See the section "Develop Your Analytics Plan" later in the chapter for more info.
- ✓ **IT sponsor:** This person plays a key role. He knows about how the other systems in the organization run and can assist with integration and problem solving.

## Evaluate Your Data

Customer analytics can produce powerful results, but it is nothing without data. If you're trying to increase customer lifetime value but don't have access to transactional data, it will be impossible to predict future purchasing behavior for individual customers.

The key to beginning any analytics project is that you start with readily accessible data. You can always incorporate additional data types, like social media data, along the way. If you are feeling like you are missing key aspects of information, just ask your customers! Sending a survey is a great way to get insight into attitudinal data.

## Pick the Right Tools to Complete the Project

No project can succeed if you don't have the appropriate software required to analyze the data. With the right tools, you can spot mistakes in assumptions and prevent ongoing problems.

To accomplish the tasks, your tools must meet three criteria:

- ✓ **An open and scalable architecture:** Make sure that the tools you choose can leverage your existing systems. You also want flexibility in your solution. When more projects come on board and data volumes increase, you need a system that will keep up with your ever-growing and changing requirements.
- ✓ **Rapid model deployment capabilities:** Modeling tools that can be deployed rapidly accelerate your time to value, which means that you can get to the solutions you need by spending less time and money.
- ✓ **Flexible model deployment options:** Flexible options allow you to embed and automate the analytical process regardless of the location. Whether you just want to create a predictive model and share the insights in report form with other colleagues or actually deploy them into an operational system, options should be available when the need arises. This will create a dramatic differentiation between you and your competitors.

## Develop Your Analytics Plan

To ensure that you effectively handle your data, you also need to have the right data miner/analyst on your project. You need someone who understands what's in the data and how to extract what you need. They also need to understand what you're trying to accomplish.

After you have them onboard, determine the size and complexity of your data set. Begin with what's available at the time and work from there. When you develop the strategy for your data mining/analysis plan, consider the following activities:

- ✓ **Data mining/analysis methodology commitment:** Commit to a process that's proven and has the capability to accomplish your goals. CRISP-DM is the standard.
- ✓ **Data mining/analysis goal definition:** Develop clear goals that tie back to your overall business strategy.
- ✓ **Data project plan creation:** Have you put the entire data plan together and shared it with all interested parties? Now is the time, if you haven't already.
- ✓ **Clear data mining success metric description:** Review your success measures so you and all stakeholders clearly understand how success is measured.

## Execute!

With a plan in place and the right tools and people on board, get started! The best thing about customer analytics is that it gets better with time. The more data you incorporate, the richer your analysis will be. The more times you run your models, the more accurate the predictions will be, as the results of each iteration are fed back as an additional data point. The faster you get started, the quicker time-to-value and return on your investment.

When you get a "quick win" in one department, start tackling your next business problem. Then tackle another department's business problem. Then solve an organization-wide issue.

## Gain the insights you need to attract new customers, keep the customers you have, and grow your profits

Customer analytics can turn predictive insights into beneficial ways of acquiring new customers, growing lifetime value, retaining customers, and enhancing customer loyalty and advocacy. Start making analytics work for you to get closer to your customers and drive revenue. Start reading *Customer Analytics For Dummies*, IBM Limited Edition, today!

- **Data is a competitive asset** — mine it to distinguish yourself from the competition
- **Analyze social media data** — discover customer sentiment
- **Positively impact your bottom line** — transform never-ending information into predictive actions
- **Keep customers loyal** — and turn them into brand advocates



Open the book and find:

- The basics of customer analytics
- How you can deploy analytics
- How to analyze data to find your best customers
- How to reduce costs while improving response rates
- How to increase customer value through targeted offers
- How to identify the indicators that lead to customer defections

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