



# Predictive Analytics

If you were running a local delicatessen, you'd probably know who most of your regular, high-value customers are. You'd know their likes and dislikes, and stock their favourite products; even suggest additional products, based on what you know they like. But how can you match that level of intimacy when you have millions of customers, thousands of employees serving them and hundreds of products – each with multiple transactions and wanting them at different times of the day, maybe even in different parts of the world?

New technologies now give instant access anytime, anyhow and anywhere – not just from nine to five, Monday to Friday. Customers expect their service provider to be ready to serve them twenty-four hours a day, every day of the year. In short, today's customers demand choice. Customers want to talk to people who know about them, as well as products and services.

Predicting customer product preferences and purchasing habits - and crafting the most relevant marketing messages around this information - requires a carefully orchestrated mix of business acumen and an analytical framework that supports fact-based decision making. Without an analytical structure in place, even an experienced analyst will have difficulty manually analysing all of the complex information they may be gathering on

customers. And, while still a powerful resource, an operational customer relationship management (CRM) system alone will be unable to provide the deeper customer understanding required to add value to every interaction with each customer.

Therefore, an organisation must not only be able to deal effectively with customers by answering questions and taking orders efficiently, but must also be able to proactively understand their needs, and so be in a position to deliver new and relevant products to the right people at the right time. So where is the next prospect for increasing margins? How about an increase in sales revenue because product content is timely and relevant?

## **Know what's next, now**

In an attempt to transform terabytes of customer data into profit, organisations are now finding themselves with a need to easily identify useful patterns and actionable relationships.

Predictive Analytics is a general term, which describes a number of techniques used to identify pieces of information or decision-making in data. A common misconception is that it involves huge amounts of data through intelligent technologies that alone, find patterns and give magical solutions to business

problems. This is not true. Instead a predictive model is generated following a highly interactive and iterative process, see Figure 1. Business expertise must be used jointly with advanced technologies to identify underlying relationships and features in the data. A seemingly useless pattern in data discovered through data mining can often be transformed into a valuable piece of actionable information using business experience and expertise.

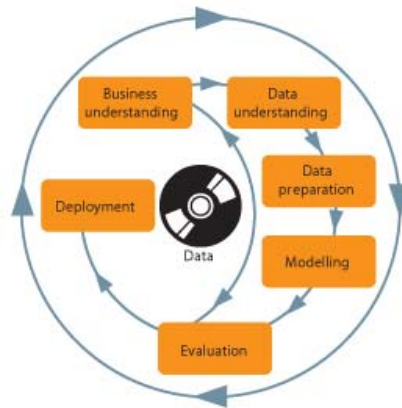


Figure 1 showing the iterative model generation process

### A 360° view

The ability of a predictive model to measure, predict and optimise customer relationships is directly proportional to the degree of information an organisation provides its data mining process. Ideally, there is a strive toward a 360° view of customers. A sound analytical infrastructure allows for the gathering of all the relevant information about customers, as well as the organisation of it in a consistent manner. In this way, a 360° view of customers is achieved, which then forms the basis for wide-ranging analytical methods that aid in the measurement and building of truly interactive, profitable propensity models.

### Make me a model

Predictive Analytics' central building block is the predictor, a single value measured for each customer. 'Tenure', for example, is based on the length of time a customer has had a relationship with a business. The predictor is usually a reliable campaign response predictor; you will receive more responses from those customers highly ranked by tenure, i.e. customers who've had a lengthy relationship with a business. That means that if you contact a customer based on their tenure, you will improve your response rate. For each prediction goal, there is an abundance of predictors that will help rank a customer database, e.g. bill value, account balance, age, income - to name but a few!

Instead of using one predictor at a time, it is possible to combine them to form a model. One way to combine two or more predictors is with a formula, such as simply adding them together. If both tenure and income influence the chance that a customer will respond to a mailing campaign then a good predictor may be:

$$\text{Tenure} + \text{Income} = \text{Response}$$

The right combination of predictors will perform better prediction by considering multiple aspects of the customer and their behaviour. To match the complexity of customer decisions, a predictive model is usually much richer and more complex than the above example, combining potentially dozens of predictors.

### Spot the difference

Once developed, predictive models can be used in conjunction with other models or business rules to accurately predict customer behaviour. The real skill is to find the best predictive model, and its corresponding predictors, for a particular business problem. This is difficult since there are so many options, algorithms, formulas, rules and weights you could apply to determine precisely how best to combine predictor variables.

To make sense of large volumes of data and how best to model them, several Data Mining products have been developed. These products use customer data to build specialised predictive models to solve business problems.

1. How can we reduce churn?
2. How can we increase customer profitability?
3. Which customers will default on their payments?

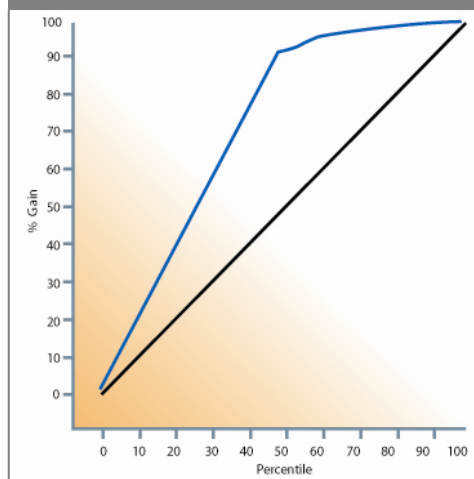
The modelling process learns from the organisation's collective experience by leveraging customer habits, behaviour and demographics. The wisdom gained is encoded in the predictive model itself.



Logica has seen this approach of Predictive Analytics work successfully in many areas:

4. predicting bad debt customers for a leading mobile operator, see Figure 2 below
5. deploying officers on threat assessments to prevent crime
6. predicting which underground network of pipes is likely to fail for a utilities company and many more.

Figure 2 gains chart showing lift from using a propensity model to predict bad debt customers



The black line shows the gain the business in question would have seen had they not used a propensity model. The blue line shows that by using a series of predictors, they dramatically improved their "hit rate". In this example, this company saw an increase of almost 200% for the top 30 percentiles.



- |                |                      |
|----------------|----------------------|
| Australia      | Malaysia             |
| Belgium        | Morocco              |
| Brazil         | Netherlands          |
| Canada         | Norway               |
| Czech Republic | Philippines          |
| Denmark        | Poland               |
| Egypt          | Portugal             |
| Estonia        | Russia               |
| Finland        | Saudi Arabia         |
| France         | Singapore            |
| Germany        | Slovakia             |
| Great Britain  | Spain                |
| Hong Kong      | Sweden               |
| Hungary        | Switzerland          |
| India          | Taiwan               |
| Indonesia      | Ukraine              |
| Kuwait         | United Arab Emirates |
| Luxembourg     | USA                  |

### Counting the pennies

By some estimates, it costs four to seven times more to replace a customer than it does to keep one. While businesses will continue to expand their customer base, they must also focus on keeping and growing their best customers. You can only prosper in such a competitive environment if you establish and deepen long-lasting relationships with your profitable customers.

Analysing past customer behaviour is important and can uncover important trends. This is analogous to looking into your rear-view mirror when driving. However, like driving, a rear-view mirror will not provide any insights about the road ahead. Predictive Analytics encourages business decision-makers to look forward, identify opportunities and avoid obstacles.

### Let's wrap up

Satisfying customers in today's highly competitive global marketplace has never been more challenging. Having a deeper insight into customer expectations and future behaviours is the key to successful marketing campaigns. Logica can use Predictive Analytical techniques to enable businesses to understand the key factors that drive customer value and loyalty, and attract more customers. As we measure and monitor the effects of marketing campaigns in light of the impact on customer profitability, we can help organisations meet and exceed their Key Performance Indicators (KPIs) around improving the value of their customer base.

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