IBM SPSS Retail Market Basket Analysis

Leverage POS data to understand sales patterns, customer preferences and buying patterns to create targeted and profitable promotions

Overview

In today's highly competitive world, retailers struggle to differentiate themselves via their product offerings and by how they promote products to customers across all channels. Smart retailers deploy effective targeted product offerings which can generate significant revenues; poorly chosen ones, though, waste money and opportunity.

Retail operations generate huge amounts of transactional information, holding a wealth of detail on product purchase patterns. The sheer volume of data, however, makes those patterns obscure and impossible to detect by manual inspection.

If retailers have insight into these patterns, they can ensure the products they offer and promotions they run match shopper preferences and behavior, and give maximum return on their marketing spend. Retailers able to link purchases to individual purchasers can take this even further, tailoring offers to specific customer segments and driving higher returns from more precisely targeted campaigns.

Solution description

Bulk transaction data as a high-value asset

Retail operations generate a vast amount of Point-of-Sale (POS) transaction data. The sheer bulk of this transactional data – recording, at the item level, every purchase through stores, on-line store fronts, and other channels – makes it very hard to understand the repeated patterns of purchase that give insight into customer behavior and preference.

In Market Basket Analysis, smart algorithms analyze huge quantities of transaction data to reveal "associations" – the patterns which show the linkage between products typically purchased together. Typical insights might be:

> *"Products A and B tend to be bought together."*

> *"If Products C, D and F are purchased, it is extremely likely the customer will also buy Product E."*

> *"Multiple purchases within Category W are common, and customers who make these purchases also tend to buy Product T."*

SPSS algorithms are highly scalable and able to process huge amounts of POS data efficiently. Our solution includes powerful tools to let retailers browse and explore the associations discovered and decide which are the most relevant and potentially lucrative to apply in their business.

Turning Insights into Action

These patterns can drive decisions on how to differentiate assortment, merchandise stores and to develop combined offers of multiple products, and within and across categories, to drive sales and profits. They can be implemented across an entire retail chain, by channel, or, if the data is analyzed at the store level, specific offers can be formulated and rolled out at a local level.

Offers might be implemented through in-store displays. For example, two products showing a strong tendency to be purchased together can be stacked together, with a special "buy both for…" offer encouraging combined purchases.

Alternatively or additionally, coupons based on these offers could be sent out in a weekly mail drop to all households in each store's catchment area, encouraging store visits as well as the desired shopping behavior.

Getting Personal

These offers, however, are "one size fits all". While they may generate significant revenues by leveraging common purchasing tendencies, they don't differentiate between customers who may have different preferences and propensities to respond to different offers.

Retailers who have a closer relationship with individual customers – for example, through a loyalty card scheme or on-line shopper registration – can refine this approach. In this case, they can combine analysis of all customers' shopping patterns with information on the *individual customer's* shopping habits. This behavioral information can then be combined with any other data held on the customer, for example:

- **Descriptive** data, combining self-declared data with any bought-in geo demographics based on ZIP or postal code

- **Interaction** information that describes how they interact with the retailer – for example, their use of on-line facilities (e.g. e-commerce and "loyalty club" websites) and order or service hotlines.
- **Attitudinal** information that describes why they do what they do, such as satisfaction scores or net promoter scores, or ecological or other attitudes captured in surveys and in feedback at points of interaction.

Apply predictive models to identify the most appropriate offers for each individual customer

SPSS algorithms analyze the whole range of customer data, relate that to previous purchases, and build predictive models that for any customer and potential offer can be applied along with business rules and other analyses to:

- Decide whether that offer is valid for that customer
- Predict the probability that the customer will respond to that offer
- Calculate the value to the retailer of the customer accepting that offer

Applying these models across offers enables retailers to select the best set of offers for each customer or customer profile. These are then delivered to the customers in the most appropriate way. For example, loyalty card holders might receive several coupons enclosed with their monthly statement.

The high level of personalization of these offers, and the fact they are based on robust predictive models, delivers high conversion rates and increased revenue per shopper and per visit.

Empower decision makers

SPSS Market Basket Analysis is delivered to business users in the form of dashboards, reports, alerts, and analysis provided by IBM Cognos 8 BI. This allows marketing and merchandising executives to understand sales patterns, customer preferences and buying patterns so they can improve product sales and margins, and create targeted and profitable promotions. The combination of IBM Cognos 8 BI and SPSS provides a complete view of historical performance coupled with a predictive view of the future.

A common integrated platform allows for a single version of the truth to be disseminated throughout the retailer, unlocking data from silos within the organization. This allows chains to seamlessly combine information that was previously time consuming to pull together, error prone, and in many cases led to decisions made on intuition as opposed to objective and data driven, which most retailers drive toward.

These capabilities enable retailers to slice information in meaningful ways in order to isolate specific challenges or identify areas of opportunity.

This allows merchants, marketers, operations and others managers within the retail organizations to quickly analyze mountains of information to not only understand what happened in the past but what they should be doing going forward from a common, integrated IBM platform.

Benefits

- Better understanding of customer preferences
- Increased basket size, with greater revenue per customer visit.
- Higher product sales and margins through differentiated product offers.
- Greater return on marketing spend (product promotions, in-store offers, targeted offers to web shoppers and loyalty card holders).

About SPSS, an IBM Company

SPSS, an IBM Company, is a leading global provider of predictive analytics software and solutions. The company's complete portfolio of products – data collection, statistics, modeling and deployment – captures people's attitudes and opinions, predicts outcomes of future customer interactions, and then acts on these insights by embedding analytics into business processes. IBM SPSS solutions address interconnected business objectives across an entire organization by focusing on the convergence of analytics, IT architecture and business process. Commercial, government and academic customers worldwide rely on IBM SPSS technology as a competitive advantage in attracting, retaining and growing customers, while reducing fraud and mitigating risk. SPSS was acquired by IBM in October 2009. For further information, or to reach a representative, visit http://www-01.ibm.com/software/data/