

THE EMERGENCE OF BIG DATA

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CUSTOMER ANALYTICS IN THE FINANCIAL SECTOR



Customer analytics has the potential to enable personalised interaction with customers as a basis for increasing sales and customer value for a financial institution. The knowledge that organisations can derive from their analytics efforts is dependent on the data that is considered in the analysis and how it is prepared for analysis.

Gunjan Mansingh

Increasingly more organisations are recognising the need for business analytics to harness knowledge about their customers that is hidden in their large data assets. The strategic benefits that analytics can bring to organisations are numerous and its value increasingly apparent to business and technology leaders.

The questions that data rich organisations should be faced with are not whether they are doing analytics but rather how “real time” they are doing it. The imperative for more agile and responsive analytics is driven by a number of factors including:

- *The increasingly volatile business environment (e.g. globalization, accelerated product life cycles, demanding customers, competitive environment);*
- *Organisational big data that has been collected and stored but is vastly underutilized for analysis, and;*
- *The availability of new technologies (e.g. cloud computing, map reduce, online analytical processing-OLAP, and predictive analytics) that support business intelligence.*

Analytics is considered to be the key component of Business Intelligence (BI), as the techniques and tools associated with analytics are the same as those for BI. These techniques rely on the integration of data collection, data extraction, and analytical tools to extract information and/or knowledge from data to assist decision makers in organizations. With the large amounts of data being collected about customers and the advances in technologies that support BI, increasingly these techniques and tools are being used to deliver knowledge about the customers to decision-makers.

With the banking industry, for example, moving away from managing products towards managing customers, customer analytics allows organisations to determine customer preferences at an individual level. It focuses on ensuring that organisations are practising customer engagement at all stages of the customer life cycle through customer acquisition, customer development and customer retention.

Financial institutions have been at the forefront of analytics adoption and numerous applications of analytics exist in a sector that accumulates an enormous

amount of customer transactional, demographic and relational data. In the Caribbean region there are still many opportunities for the local financial sector to exploit their data assets. This article highlights some of these opportunities.

ANALYTICS AND KNOWLEDGE DISCOVERY

Analytics enables organisations to make business decisions that are based on data rather than “guesswork” and intuition. Organisations analyse their historical and current data to determine the likelihood of future events using data mining and other predictive analytics techniques. When organisations focus on “Why did it happen” they use OLAP to provide summarized, multi-dimensional and consolidated views of data; and when their focus is on “What might happen” they use data mining techniques and tools for predictive modelling.

The process of analytics is best managed as a repeatable rather than an ad-hoc activity within an organization. Knowledge discovery via data analytics is a multi-phased approach that involves more than just the application of data analytics techniques. It prescribes a set of activities and tasks that must be performed during the knowledge discovery journey and identifies the various dependencies between and across the different phases, it consists of the following steps: Problem Formulation, Business Understanding, Data Understanding, Data Preparation, Modelling, Evaluation, and Deployment.

Of the many phases, the business understanding phase is considered to be the most important as it guides the subsequent phases in performing analytics. However, data preparation is the most time intensive and most of efforts of analytics is spent on this phase. For analytics efforts to be successful, data preparation should not be trivialized or under-resourced, and relies heavily on domain knowledge and the ability of the BI analyst to identify the key data assets and derive the appropriate composite and aggregate variables with predictive power.

APPLICATIONS IN THE FINANCIAL SECTOR

To understand existing and prospective customers, various analytical techniques have been applied to customer data in the financial sector. The objective of these techniques is to find the “knowledge nuggets”

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in the form of patterns, correlations and associations that are hidden in the data. These nuggets enable data rich organisations to do the following:

- Develop risk profiles of customers (e.g. high risk borrower, either for loans or credit cards).
- Detect fraudulent transactions.
- Build profiles and preferences of customer segments and their purchasing behaviour.
- Determine the products that can “cross-sell” (i.e. the products that can be bundled and sold to customers). ▶▶

- Identify customers to “up sell” to (i.e. buy a higher value product of what they currently have).
- Identify a customer likely to churn by identifying the types of transactions that are typically done before leaving.
- Understand customers’ opinions on products and services.

Credit risk modelling and marketing are typical applications of customer analytics. Organisations in the Caribbean may be

CREDIT RISK MODELLING

Risk management is a critical function in the financial sector as managers need to know the credit worthiness of their customers. Offering new customers credit cards, extending existing customers lines of credit, and approving loans can be risky decisions for banks, whose fundamental intermediation business model depends on how well they manage risk. Predictive modelling can be used to reduce the risk associated with these decisions by determining those customers who are likely to default by building profiles of high-risk borrowers. This will allow a bank to score the customer and decide whether a person is a good candidate for a loan or a credit card, or if there is a high risk of default. By being able to identify the customers likely to default, the bank is in a better position to reduce risk.

The traditional data sources that are used in credit risk modelling may be inaccurate, outdated or incomplete (e.g. income, occupation). Faced with such data quality challenges, traditional lending business models such as consumer finance and microcredit

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doing such modelling but to ensure that they are getting full benefits from their customer data they can improve the existing practices by following a systematic knowledge discovery approach, to ensure that they are using the right techniques and data. Figure 1 shows the silos of data that may exist for a customer in different locations within the organisation.



Figure 1: Customer Centric view of data assets

typically rely on a conservative risk modelling approach and high interest rates to compensate for the high risk of default. There are untapped non-traditional sources of data that offer new opportunities to build more discerning risk models to determine customers’ ability to repay and willingness to pay.

For example, a customer’s ability and propensity to pay back can be assessed using proxy variables derived from utility bills and point of sale (POS) data. The point of sale data from retailers also provides insight into the spending patterns of customers.

Recent financial sector studies, demonstrate that customer demographics, banking transactional data and POS customer data for credit card customers can be used to build profiles to identify those customer who are likely to default and those who are not. Integrating data from these varied sources helped identify additional variables which served as proxy for a customer’s earning and spending capacity. Predictive modelling techniques in risk analysis were used to develop behavioural profiles of the profitable credit card customers and risk profiles for all customers. These profiles assisted in determining the credit worthiness of a customer. Understanding such customer behaviour can result in better credit risk models and enable organisations to make data-driven decisions.

MARKETING

Sales and marketing departments of financial services can use analytics to analyse customer data to derive the likelihood of purchase of a particular product. With the shift from product-centric to customer-centric, the customer data that exists in product silos needs to be integrated and analysed. For example, in figure 1 the data for a customer across each product silo will be integrated to create one master customer record. This allows institutions to gain better customer insights and to develop profiles of customer preferences across the range of products and services. By offering only those products and services that customers really want, banks can make

substantial savings on targeted promotions and offerings that would otherwise be unprofitable.

Banks can also “cross-sell” or “up-sell” by identifying additional products or services a particular type of customer may be interested in. The more products and services a bank can provide for its customers, the greater the retention likelihood (“stickiness”) and customer lifetime value. Customer attrition can also be addressed by identifying the transactions typically done by customers who are likely to leave. Thus, analytics can help the financial entity in not only retaining their existing customers but also to gain new customers. In a competitive environment, customers have many options with regard to where they can do their business; therefore, customer acquisition and retention are very important concerns of a marketing department.

CONCLUSION

Customer analytics has the potential to enable personalised interaction with customers as a basis for increasing sales and customer value for a financial institution. The knowledge that organisations can derive from their analytics efforts is dependent on the data that is considered in the analysis and how it is prepared for analysis. Often the focus is on what analytical techniques and tools should be used and not enough on the data that should be used and in what form. For analytics to be successful it is imperative that businesses follow a structured Knowledge Discovery via Data Analytics approach and use a multidisciplinary team of business leaders, business analysts, data analysts and BI analysts. This will ensure that the right business problems are solved using the right analytical techniques and tools, and the appropriate data assets. ■

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