Industrial and Commercial Bank of China (ICBC) Employs Models to Reconfigure Its Branch Network

The Industrial and Commercial Bank of China (ICBC) has more than 16,000 branches and serves over 230 million individual customers and 3.6 mil- lion corporate clients. Its daily financial transactions total about $180 million. It is also the largest pub- licly traded. bank in the world in terms of market capitalization, deposit volume, and profitability. To stay competitive and increase profitability, ICBC was faced with the challenge to quickly adapt to the fast-paced economic growth, urbanization, and increase in personal wealth of the Chinese. Changes had to be implemented in over 300 cities with high variability in customer behavior and financial status. Obviously, the nature of the challenges in s1,1ch a huge economy meant that a large-scale optimization solution had to be developed to locate branches in the right places, with the right services, to serve the right customers.

With their existing method, ICBC used to decide where to open new branches through a scoring model in which different variables with varying weight were used as inputs. Some of the variables were customer flow, number of residential house- holds, and number of competitors in the intended geographic region. This method was deficient in determining the customer distribution of a geo- graphic area. The existing method was also unable to optimize the distribution of bank branches in the branch network. With support from IBM, a branch reconfiguration (BR) tool was developed. Inputs for the BR system were in three parts:

a. Geographic data with 83 different categories
b. Demographic and economic data with 22 dif- ferent categories
c. Branch transactions and performance data consisted of more than 60 million transaction records each day

These three inputs helped generate accurate customer distribution for each area and, hence, helped the bank optimize its branch network. TheBR system consisted of a market potential calculation model, a branch network optimization model, and a branch site evaluation model. In the market potential model, the customer volumeand value is measured based on input data a n d expert knowledge. For instance, expert knowledge would help determine if personal income shouldbe weighted more than gross domestic product(GDP). The geographic areas are also demarcatedinto cells, and the preference of one cell over theother is determined. In the branch network optimization model, mixed integer programming isused to locate branches in candidate cells so thatthey cover the largest market potential areas. Inthe branch site evaluation model, the value for establishing bank branches at specific locations isdetermined.

Since 2006, the development of the BR has been improved through an iterative process. ICBC's branch reconfiguration tool has increased deposits by $21.2 billion since its inception. This increase in deposit is because the bank can now r e a c h more customers with the right services by use of its optimization tool. In a specific example; when BR was implemented in Suzhou in 2010, deposits increased to $13.67 billion from an initial level of $7.56 billion in 2007. Hence, the BR tool a s s i s t e d in an increase of deposits to the tune of $6.11 billion between 2007 and 2010. This project was selected as a finalist in the Edelman Competition 2011, which is run by INFORMS to promote actual applications of management science/operationsresearch models.

What We Can Learn from This Application Case

Many organizations in the world are now embracing analytical techniques to stay competitive and achieve growth. Many organizations provide consulting solutions to the businesses in employing prescriptive analytical solutions. It is equally important to have proactive decision makers in the organizations who are aware of the changing economic environment as well as the advancements in the field of analytics to ensure that appropriate models are employed: This case shows an example of geographic market segmentation and customer behavioral segmentation techniques to isolate the profitability of customers and employ optimization techniques to locate the branches that deliver high profitability in each of the geographic segment.