Application Scorecard for SME Finance

(Micro and Small Businesses)

Client Profile

One of the largest Islamic Bank in UAE, servicing corporate, retail and SME customers. The bank is rapidly growing its SME portfolio and was recently awarded the "Best Supporting Bank for SMEs."

Business Objective

To sustain its thrust on SME segment and further improve its portfolio performance, bank was looking to automate its financing decisions for micro and small businesses by implementing credit risk scorecards. Historically bank had relied on a set of business rules based on parameters like age of business, turnover, industry segment etc to take its financing decisions. This process was found prone to human errors, while limiting the total throughput and application turnaround time. Key objectives of implementing risk scorecards were:

‑‑> Automate financing decisions to enable decentralized decision making

‑‑> Reduce application turnaround time to gain competitive advantage

‑‑> Reduce credit losses and transaction costs to improve profitability and capital requirement

‑‑> Increase business volumes

Summary

With limited opportunities for credit expansion in corporate and retail segments, SME sector (especially micro and small businesses) offers an attractive market segment with high yields. However, banks need to assess the risk profiles of the new prospects carefully to build a quality portfolio. Application scorecard can enable a bank quantify the credit risk associated with new customers, take objective decisions, improve service levels and reduce transaction costs.
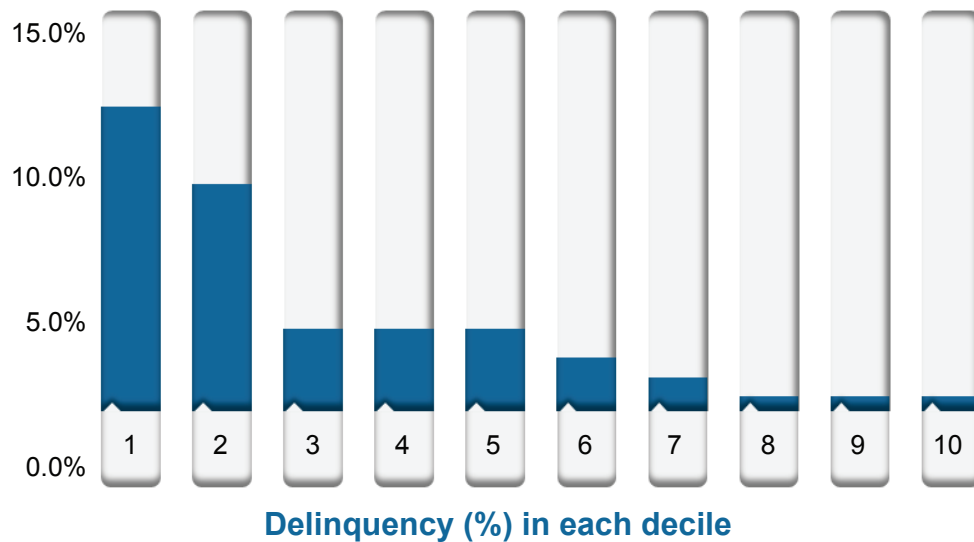
Key Challenges

⇢ **Data paucity -** Unlike retail portfolio, the total number of customer records for SME portfolio were very low. The bank was able to provide less than 5,000 customer records on historical transactions, however there was a massive growth in number of new customers in more recent months.

⇢ **Lack of standardization in variables -** Due to an absence of origination system and free text form for key variables, there were many duplicate values for industry code, sector, region etc.

⇢ **Absence of a loan origination platform -** Due to overall low number of records and good quality of portfolio, the number of customers with 90+ DPD were extremely low. This represented a major challenge to seek significant statistical evidence on model parameters.

D&B Solution: A five step approach

Preliminary data analysis revealed that due to very low number of delinquent accounts (90+ DPD in 12 months), it was not possible to develop a robust statistical model. We therefore recommended using a proxy bad definition by considering 30+ DPD in 12 months to increase the number of 'bad' observations. Following steps were followed to develop and implement the application scorecard:

⇢ **Step 1 – Data Quality Management:** High quality data is a pre-requisite for developing statistical models. We used a variety of techniques like data scrubbing, proxies and text analytics to fill in missing information and standardize irregular data entered as free text during the application capture process. All industry sectors and subsectors were standardized based on global ISEIC definitions. After a one time data cleaning process, we recommended standard parameters to be captured as 'drop down' values instead of free text entry in future applications in order to prevent data related issues.

⇢ **Step 2 – Creation of Composite Variables:** Our experience in the region has shown that the turnover value for an SME is highly dependent on the sector of operation and hence provides better outcome for modeling if used as a combined variable rather than as an independent variable on its own. Therefore a number of composite variables were created by combining turnover, sector /subsector and age of business to find variables which showed higher predictor values.

⇢ **Step 3 – Statistical Build of Base Model:** We used advanced statistical techniques for variable selection, binning and weight allocation to develop a base model that comprised of total eight variables out of twelve variables made available by the bank, based on their weight of evidence.

⇢ **Step 4 – Model Testing:** Model was testing using bank's data on past transactions before submitting it to their business and credit teams for approval. The final model was able to achieve a high level of accuracy in predicting the delinquent customers with a KS value of more than 50%. Model was able to identify more than 40% of the delinquent customers in top decile (worst 10% customers by score) and 70% of the delinquent customers in top two deciles (worst 20% customers by score).

⇢ **Step 5 – Model Implementation:** As the bank did not have any origination solution for processing SME applications, a MS-Access utility was provided to enable implementation of scorecards across branches as a short term solution. The bank plans to implement an origination solution within next 12 months and the scorecard will be migrated to new system subsequently.

Delinquency (%) in each decile

Client Benefits

The key benefits accrued from the implementation of application scorecard are:

⇢ Reduction in credit losses by 80 bps

⇢ Improvement in average application turnaround time from 9 days to 3 days

⇢ Decentralization of application processing at branch level

⇢ Ability to process 40% more applications with same resources and therefore a reduction in transaction cost

Ongoing client support

We signed an annual services contract to provide ongoing model monitoring and enhancement services for the models built during this engagement. As the overall volume of data was very low and current rate of customer acquisition is very high, the first revalidation exercise has been planned at the end of six months from model implementation.

About D&B

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