



UK bank uncovers profit niches with optimized pricing

success story: optimization



Client	The Co-operative Bank, offering financial products to 6 million customers in the UK.
Challenge	Meet challenges to grow revenues in spite of restrictions on risk-based pricing
Solution	FICO™ Custom Decision Optimization
Results	First 16 months' use indicates a 45% improvement in profit per application. Break-even achieved in the first year of usage.

The COOPERATIVE BANK

Break-even on the project was achieved in the first year of usage, with the optimized strategy running only on 50% of applications.

Custom Decision Optimization provided The Co-operative Bank with insights into the key drivers of profit

» CHALLENGE

The Co-operative Bank—part of The Co-operative Group, the world's largest consumer co-operative—offers a complete range of financial products from both branch and internet banking channels to more than 6 million customers.

The Co-operative Bank approached FICO because of concerns about its New to Bank Personal loan applications (loan applicants with no previous relationship with the bank).

There were concerns that portfolio profitability was being impacted by.

- Greater competition and customer awareness of price, resulting in smaller margins.
- New UK regulations, which meant at least 66% of opened loans had to receive the typical interest rate advertised by The Co-operative Bank, restricting the current risk-based pricing strategy.
- Increased concerns over levels of consumer-debt / affordability.
- Regulatory reviews on the selling of protector insurance.
- Increased early repayment of loans.

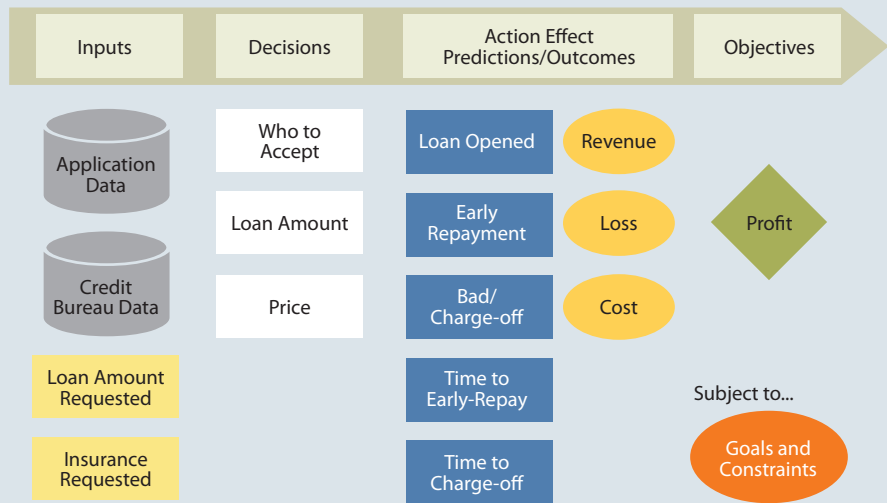
With FICO, the bank developed a plan to respond to these challenges using Custom Decision Optimization. The bank had used this service in an earlier credit card / credit line management project.

Custom Decision Optimization provides insights not only into the profitability of the different possible actions, but also into how the key drivers of profit interact," says Howard Price, head of Credit –Retail Bank at The Co-operative Bank. "Small improvement to key profit drivers can add up to significant benefits."

The bank decided to focus on the portfolio's loan profitability through enhancing the existing use of risk-based pricing for new applications. At the same time, the bank wanted to improve accept rates and maintain tight controls on loan amounts / affordability and bad debt.

"In essence, the goal was to increase the profitability of the New to Bank loan portfolio by accepting the right applicants, for the correct loan amount, at the right price," says FICO Principal Consultant in Analytic Solutions Neill Crossley.

Figure 1: The key components of the decision model design



Custom Decision Optimization allows The Co-operative Bank to determine the trade-offs between multiple inputs, such as those in this chart, with the goal of maximizing loan lifetime profit (diamond).

» SOLUTION

The Co-operative Bank is both innovative and rigorous in its process, so there was excellent historic data on all aspects of their previous loan and pricing decisions to analyze and model.

The first stage of the project entailed obtaining an in-depth understanding of the business environment, the objectives of the project and the breadth and quality of data. Once this was understood, the next step was to design, build and verify the optimization decision model, an integral part of the FICO™ Custom Decision Optimization approach.

It was agreed that the primary goal of the optimization would focus on maximizing loan lifetime profit, based on the bank's own profit model, which included a number of elements, including interest, insurance commission, cost of funds, as well as other costs and loss data.

The loan decisions to be optimized were loan accept / decline, loan amount (£2000 to £25,000) and risk-based pricing factor (+0% to +12%). In all, 92 unique action combinations were to be assessed within the decision model.

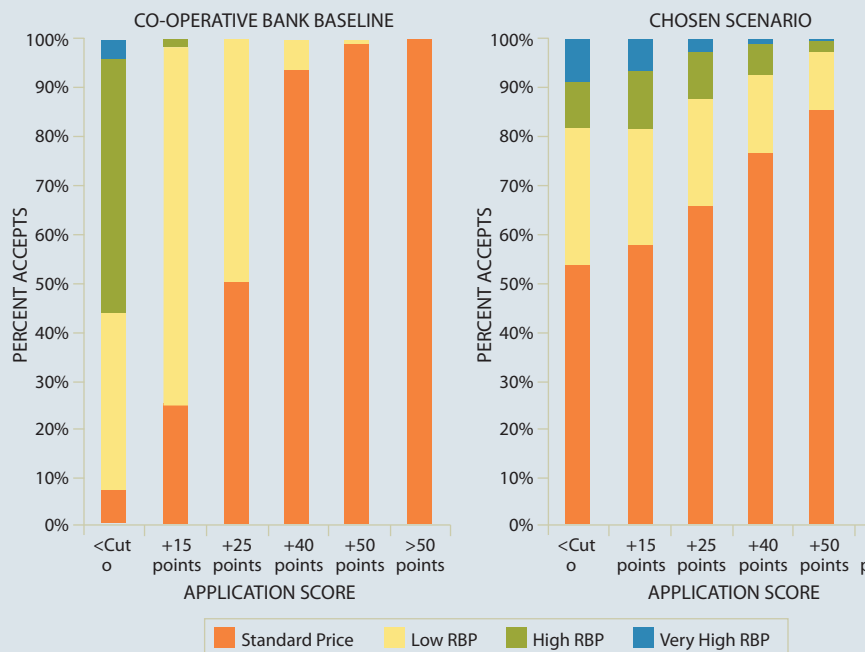
The inputs to the decision model were the standard application and credit bureau data that The Co-operative Bank collected.

The "action-effect" predictive models looked at how each combination of decisions would affect the predicted outcome in particular areas—such as whether a loan would be opened by the applicant (particularly important given the potential impact of loan price) and whether key profit drivers, such as time to early repayment and time to charge-off, would be affected.

These last two factors considered both the probability the event would occur and, if so, when the event would occur. It is important to project the financial impact of these events in solving this type of business problem.

A wide range of business constraints were also included, both from a portfolio level (e.g., portfolio-level losses or percentage of accounts accepted receiving risk-based pricing in order to meet the regulatory requirements)

Figure 2: Moving from a risk-based pricing (RBP) to a profit-optimized strategy



The chosen scenario showed significant changes from the bank's existing strategy, with a higher proportion of risk-based pricing focused on small and large loans, and also in higher score bands, as illustrated.

and account level (e.g., the effect of replicating potential policy rules such as score cut-offs and affordability measures).

Optimization and simulation

Once each component had been built, the complete decision model was constructed within FICO™ Decision Optimizer software. Recent data was input, scores and values calculated and potential optimization scenarios run. These are developed by adjusting the different constraints that are applied (either including or excluding them) or by adjusting the values/cutoffs used and then comparing the results to the current strategy (the baseline strategy).

This process is very informative because it allows the business to understand what the key profit influencers are and what combination of constraints best meets its objectives. It also allows for true “what-if” analysis based on predictions that consider the actions taken on each account, giving confidence to challenge the status quo in areas such as policy rules.

A key benefit in this project was the ability to quantify the impact on profit of the pricing decision, showing the trade-off between decreased loan open rates but increased revenues from those that do open, as the price is increased.

A range of optimization scenarios were run and the outputs compared to the baseline strategy. From this, The Co-operative Bank selected its preferred optimization scenario that would allow only a 1% increase in loss per loan application, but was predicted to provide a 46% increase in profit per loan application.

The chosen scenario showed significant changes from the bank's existing strategy, with a higher proportion of risk-based pricing focused on small and large loans, and also in higher score bands, as illustrated by Figure 2.

“In effect, the project moved The Co-operative Bank from a risk-based pricing approach to more of a profit-optimized-based pricing approach,” says Neill Crossley, principal consultant at FICO.

The chosen scenario was then refined into a decision tree-based decision strategy, ready for implementation within the bank's business rules management software origination environment.

» RESULTS

The optimized strategy has now been in place for more than 16 months, and to date, the results have been very impressive.

“Break-even on the project was achieved in the first year of usage, with the optimized strategy running only on 50% of applications,” says Crossley. “The ROI from three years use of Custom Decision Optimization on 50% of applications is projected to be around 250% when compared to the original strategy, even more if The Co-operative Bank can attract more applicants through the door.”

There have been significant increases in loans taken on and the price and other income from those loans, while all key constraints and regulations have been met. There are also fewer loans repaying early and no change in the bad rates.

Next steps

As a follow up to the initial project, The Co-operative Bank will use the Decision Optimizer software and the installment loan decision model embedded within it allows the bank to:

- Run new data through the decision model
- Create potentially thousands of different optimization and simulation scenarios
- Visualize and report on the output
- Refine its decision strategies accordingly

Given the dynamic risk environment the bank faces, it can more easily prepare and react to changing circumstances by running what-if scenarios and then developing a new decision strategy—ready for implementation. Such circumstances could be a change in the economy, in the market or in its own business goals and constraints.

The software puts the power of optimization in the hands of The Co-operative Bank's business analysts to identify more profitable areas of business (potentially to support proactive marketing activity), to challenge business constraints such as policy rules and to identify those scenarios that best fit its business objectives, both now and in the future.

Decision Optimizer can be utilized across products and decision areas, leading to synergies in approach. Indeed, The Co-operative Bank has also taken the Decision Management tool for its credit card credit line management project.

Figure 3: Results to date 16 Months applications with performance exposure between 1 and 16 months

	Optimized Strategy Percent Change Over Baseline
Accept Rate	12% increase
Referral Rate	7% decrease
Loans Opened Rate	12% increase
Blended Risk Based Price	16% increase
Percent Loans Opened with RBP	Constraint met with a good margin
Average Loan Amount	0.35% increase
Early Repayment Rate	3% decrease
Insurance Commission Per Loan Opened	4% increase
Bad Rate (3+ down)	No change
Net Revenue Per Application to Date	28% increase
Forecast Profit Per Application*	45% increase*

*The primary objective was to maximize loan lifetime profit. The average loan term is over 4 years, so the early trends in terms of net revenue, loss and early repayment have been extrapolated to arrive at a value that equates to the optimization objective. As can be seen, the early performance is very much in line with the predicted profit improvement.

Decision Yield

Precision

The Co-operative Bank was able to identify key drivers of profitability

Consistency

The Bank could ensure key constraints and regulations could be applied across the board.

Agility

The software puts the power of optimization into the hands of the Bank's business analysts to identify more profitable areas of business.

Speed

The Bank's analysts can quickly respond to changing circumstances by running what-if scenarios and then developing a new decision strategy

Cost

Break-even on the project was achieved in the first year of usage, ROI from three years is projected to be around 250%.



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