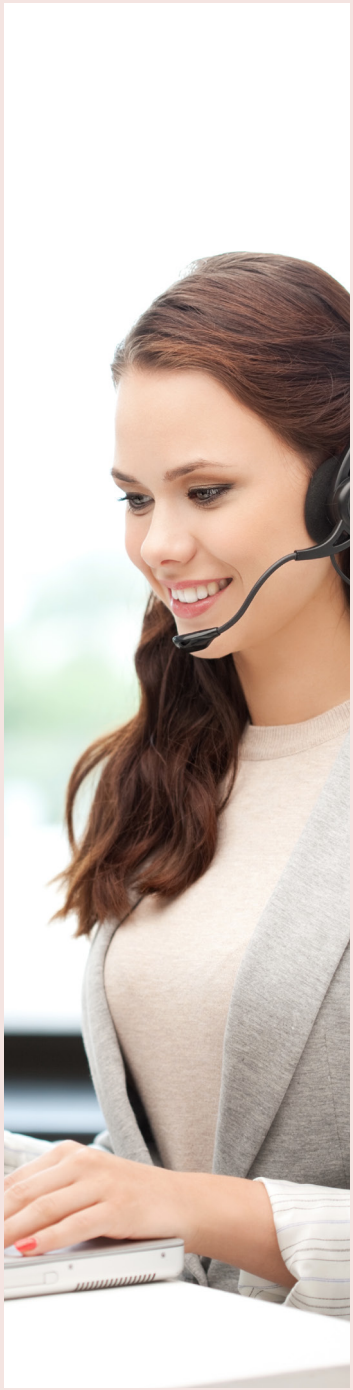
CASE STUDY



SLICING THROUGH A FOREST OF FRAUD WITH DEEP ANALYTICS

Abstract

An Australian telecommunications firm was facing rising customer dissatisfaction and resultant revenue loss due to sales malpractices by some agents at its retail stores and contact centres. This case details how Valerie Coker, Senior Manager for Business Analytics and Fraud Prevention leveraged the company's 15-year partnership with Infosys BPM to identify and stem the fraud, saving millions of dollars for the firm.

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A thicket of clever mis-selling

Valerie Coker is a Senior Manager for Business Analytics and Fraud Prevention at one of Australia's largest telecommunications firms. Of late, the company's retail stores and contact centres had reached out to her requesting support with a massive problem they were facing.

Several sales agents in the retail stores and contact centres were sometimes unknowingly, or in many cases deliberately, pushing inappropriate products to customers. Even as this unethical cross-selling and up-selling helped the agents fulfil their sales targets, they would also often resort to manipulating customers' multi-credit assessments to ensure more commissions.

The outcome of these and other improper sales practices were beginning to take a toll. The company began facing early disconnections as well as increased customer dissatisfaction, churn, and commission leakage.

Valerie had her task cut out for her. She needed to figure out how her team could accurately measure the agents' sales performance with respect to risk and compliance. The problem was that her existing reporting and analytics tools would be neither effective nor rapid enough to measure the agents' selling behaviour and performance in real-time.

On the other hand, the post-facto analysis that was already being done by the sales and business units had hardly stemmed the malpractices and resultant rising customer dissatisfaction and revenue loss.

Thankfully, Valerie knew whom she could call on for help. She called for a meeting with Harish Manchanda, an account manager with Infosys BPM, the telecom giant's trusted IT outsourcing partner since 2011. The partnership between the two companies had grown and evolved over the years into a strategic one, and Harish and his team had played key roles in several transformation journeys that the telecom giant undertook.

Cutting through to the fraud, algorithmically

As she briefed Harish on the situation, Valerie highlighted her chief concern, the absence of structured preventive fraud controls for the sales and business functions.

Harish also understood that the retail stores and contact centres had made limited use

of machine learning and deep analytics. This made it difficult for them to analyse the high volumes of telecom data volume, especially when faced with the complex business rules and mix of legacy and cloud-based systems that the enterprise employed.

The challenge was both massive and complex, but Harish and his team were ready to tackle it head on. They first collected detailed firmographic and location data on all the company stores, as well as data on all the sales agents. Then they carried out transformation activities on the data they had collected, also creating new measures to further improve the data quality.

Approach summary

Next, Harish set the team to develop an UML (unsupervised machine learning) model that amalgamated all the different types of data points attributed to an agent's sales behaviour. These included sales commissions, volumes, product level activation vs disconnection data, customer's payment behaviour, credit volume, credit manipulation data among others. Finally, after profiling all the company's stores based on their firmographic data and store location, they applied an Isolation Random Forest model using Python scripts to analyse the behaviour of the agents.

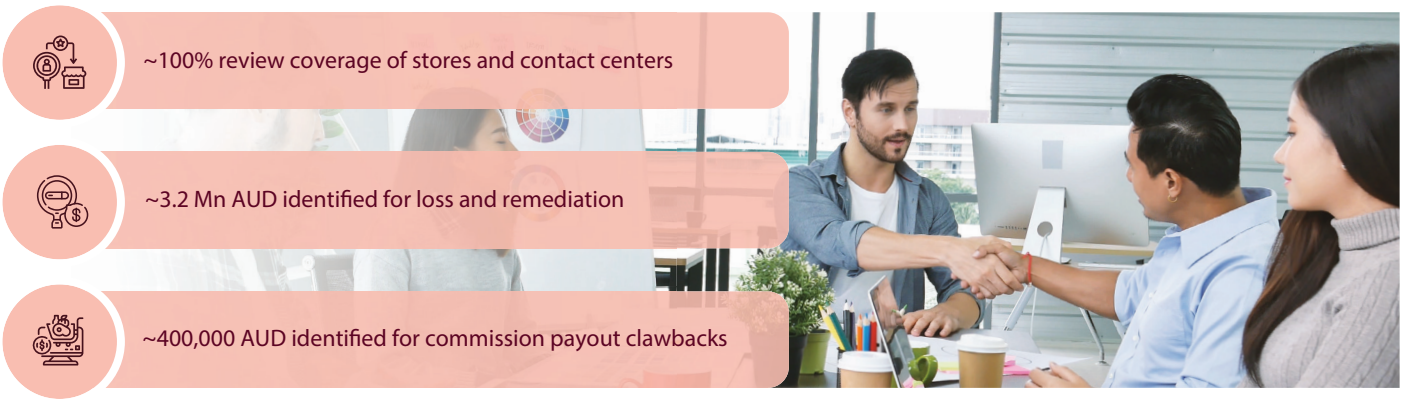
Through randomly partitioning the data sets and isolating outliers, the Isolation Random Forest algorithm efficiently detected the anomalies in the complex, multi-dimensional data sets of all the stores' repetitive historical sales performance. The team had also set up a supervised machine learning using Shapley values, to be triggered after the anomalies were detected. This helped them estimate which business metrics could be attributed to predicted agent level outliers.

Then, with the system fully built, the team moved on to validate its models by running it on historical data, ensuring cross-validation and a continuous feedback loop from the stores and back-end operation teams. Finally, when satisfied with its effectiveness, they hosted the entire process in the organization's CRM suite, baking in an AI-based repetitive refresh function to gather the latest data.

The fruits of expert analytics

Not much later, Valerie was delighted and so were Harish and his team. The feedback pouring in from the business and sales units indicated that their new fraud detection system had already identified close to 3.2 Mn AUD for loss and remediation, and commission payout clawbacks approximating to 400,000 AUD. With the solution's all-encompassing, almost 100% review coverage, the retails stores and contact centres now also had near real-time business insights.

Key benefits



Harish and his team did not have much time to celebrate though. Because of growing demand from across the enterprise, Valeria soon handed them another mandate. They are now busy migrating their fraud detection model to the cloud for more advanced features such as fully automated business intelligence with feedback loops, and for more widespread deployment in the coming days.

**Names have been altered to preserve the identities of the people involved.*

For more information, contact infosysbpm@infosys.com

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