

IDIRO ANALYTICS

Predicting customer behaviour for Digicel



IDIRO ANALYTICS – PREDICTING CUSTOMER BEHAVIOUR FOR DIGICEL

Headquartered in Dublin, and 100% Irish owned, Idiro Analytics significantly improves commercial and operational KPIs for its clients by using the very latest in advanced analytics techniques. Idiro Analytics has been working with mobile telecoms and home & entertainment provider, Digicel, since 2012. Digicel operates in the South Pacific, Central America, and across the Caribbean. Digicel enlisted the services of Idiro to assist with understanding customer behaviour in order to grow revenues and improve customer experience. Idiro currently provides analytics as a service in 27 of Digicel's markets for 18 million customers across the three aforementioned regions.

PROJECT STRATEGY & OBJECTIVES

Digicel's initial goals were to retain customers (reduce churn), and to influence customer KPI (i.e. grow revenues). Digicel wished to apply action in the form of marketing campaigns to achieve these goals. Idiro would provide the intelligence behind the targeting - analysing customer behaviour to recommend appropriate plans and products to promote to customers for retention, and, in more recent times the project's scope evolved to include care, cross-sell and upsell. In the case of upsell, the objectives for this were two-pronged (1) increase revenues and (2) increase customer satisfaction by offering them the right offer, at the right time on the right channel. Many real-time marketing solutions for managing customer interventions are often reactionary - Idiro's strategy was to take a holistic approach to managing the customer, driven by robust analytics using multiple data sources, and based on the consumer's current stage in their customer journey / lifecycle. This combination points to what the next appropriate intervention should be for the customer, such as a care offer, upsell, or retention offer etc. With this in mind, Idiro and Digicel's strategy iterated in a three-step approach - (1) Experiment, (2), Refine, (3) Optimise. The premise behind this was to trial many different modelling approaches and different levels of interventions to see what is successful, and then rapidly scale based on statistical evidence. After an initial deployment phase to get the systems in place across multiple markets, quick-win smart logic, based on business requirements, was implemented for upsell campaigns. More complex model algorithms were introduced as part of the plan, all the while measuring their impact on the end goals using A / B testing with control groups. Results are monitored and updates and refinements are made when appropriate.

IDIRO'S APPROACH – SYSTEMS, TECHNOLOGY, AND INNOVATION

Data from an organisation is required to understand and predict customer behaviour. Idiro combined data from multiple data sources including CDRs (link level Call Detail Records), Subscription sign-up information, VLR (Visitor location records) data, Top-up data (most Digicel markets are primarily prepaid), Churn information, Handset capability (many markets contain users who do not have smart-phones - this affects the make-up of what kind of prepaid bundle that they will purchase), Deep Packet Inspection, Subscriber demographics, and many other data sources.

Housed on centralised Linux-managed servers on some of the main Digicel markets, Idiro built a data pipeline to manage and put structure to the multiple disparate data sources. Idiro's own proprietary software, built for ETL (Extract, Transform, Load) was installed as the platform to manage crunching the

data. The platform, called Autolytex, is built in Oracle APEX and has been developed over the 15+ years of experience that Idiro has with dealing with ingesting Mobile Telecoms specific data.

At a high-level, the entire process can be considered in five steps:

1. Data capture
2. Data transform and audit
3. Predictive analytics process
4. Campaign execution
5. Evaluate and optimise.

Autolytex manages the **data capture** and **data transform**. Data is fed to the server at regular intervals and the system picks them up and creates hundreds of meaningful model features that can be consumed by the Data Science team. Features such as the direction of the call, recency of last top-up, count of bundle sign-up etc. are examples of such features created. The **predictive analytics process** is the backbone of Idiro's core competency. The data that has been summarised, cleaned, and aggregated by Autolytex is made available for consumption in a data mart. The data is then mined by Idiro's data scientists, using a variety of the latest Machine Learning techniques - including some custom-built algorithms - in order to provide actionable insights for the client Customer Value Management team based on their requirements (e.g. upsell, retain etc.). Primarily for predicting customer churn, the Machine Learning techniques implemented include a combination of supervised algorithms such as Support Vector Machines, Regression modelling, and Random Forest. Typically, these are run by Idiro data scientists using Python or R programming languages. Unique **innovation** is brought to the process using Idiro's proprietary built algorithm SNA (Social Network Analysis). SNA uses complex graph partitioning algorithms, breaking a very large network into communities of closely linked individuals, such as friends, business colleagues and families. Model features such as "churn pressure", or "influence to buy" can be calculated per subscriber which feeds into their propensity for a particular action. Many human actions are, by nature, viral. SNA has been a proven effective tool in predicting such virality of action.

In particular where upsell is a business goal, a particular challenge to the process is to avoid revenue cannibalisation if a subscriber is targeted with a change in price-plan. For this, unsupervised algorithms are used, such as k-Nearest Neighbours and Neural Networks which help reduce negative impact on specifically defined revenue KPIs.

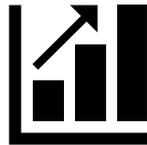
Campaign execution is carried out by Digicel's Customer Value Management team with support and input from Idiro's consultants. The appropriate level of discount / particular product for targeting is output from the modelling process for execution to Digicel's campaign management platform. Finally, the results (uptake and impact on revenue) can be **evaluated** and fed back into the modelling process to continue to evolve and optimise the process.

Further innovation to the process is brought by Idiro's proprietary solution **Next Best Activity (NBA)**. NBA is a piece of software which is currently deployed in the contact centre. The product is a cross-sell / upsell recommendation engine which allows the contact centre agents to recommend a next course of action (e.g. a product sale) to an inbound contact - thus turning the contact centre into a profit centre. NBA makes use of the analytics processes in place, and its decision engine is augmented by real-time

factors such as the customer's balance, and eligible product range for purchase (based on an integration with a Digicel internal system API). This instance for Digicel, built in Oracle APEX, is integrated with Digicel's charging systems - meaning that a successful sale can be fully charged and activated end-to-end through NBA's front-end GUI.

IMPACT FOR THE CUSTOMER

IMPROVED CUSTOMER EXPERIENCE



+53% Repeat purchases



+12% Improvement in churn

One of the metrics monitored through NBA is the stickiness, or repeat purchases, of a product family which is sold as a new product for the first time to a customer who has called into the call centre for some other reason, but who has ended up availing of the product as promoted by the analytics. This is a good proxy for customer satisfaction - when the customer buys a new product, and continues with repeat purchases over time - this is a good indicator that you have got your targeting right. This metric is measured using control groups and following go-live of NBA, a 53% increase in 'product family' repeat purchases were observed. An improvement in customer churn figures is also a good metric for gauging improvement in customer experience. Predicting churn is Ildiro's bread and butter. Improvement in churn has been measured at 12% (percentage points improvement) on average across markets for those cohorts targeted in Ildiro retention campaigns. Again, control groups are used to measure the impact, and this figure is particularly impressive, given that the targets are generally very active (harder to predict churn).

EVIDENCE OF SUCCESS

Ildiro has been working with Digicel for 7 years delivering a return of approx. 6x to 8x annually.

"Ildiro has helped us over the last 7 years to rapidly leverage a top-notch churn prediction model across a majority of our global operations, combined with some consultancy services to help us to gain insights and delight our subscribers with intelligently selected relevant and personalized offers.

They always try to use best-in-class and recent machine learning algorithms to improve the accuracy of their models".

Marc Buekenhout- Director of CVM/CRM and Innovation, Digicel Group – May 2019

Digicel



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