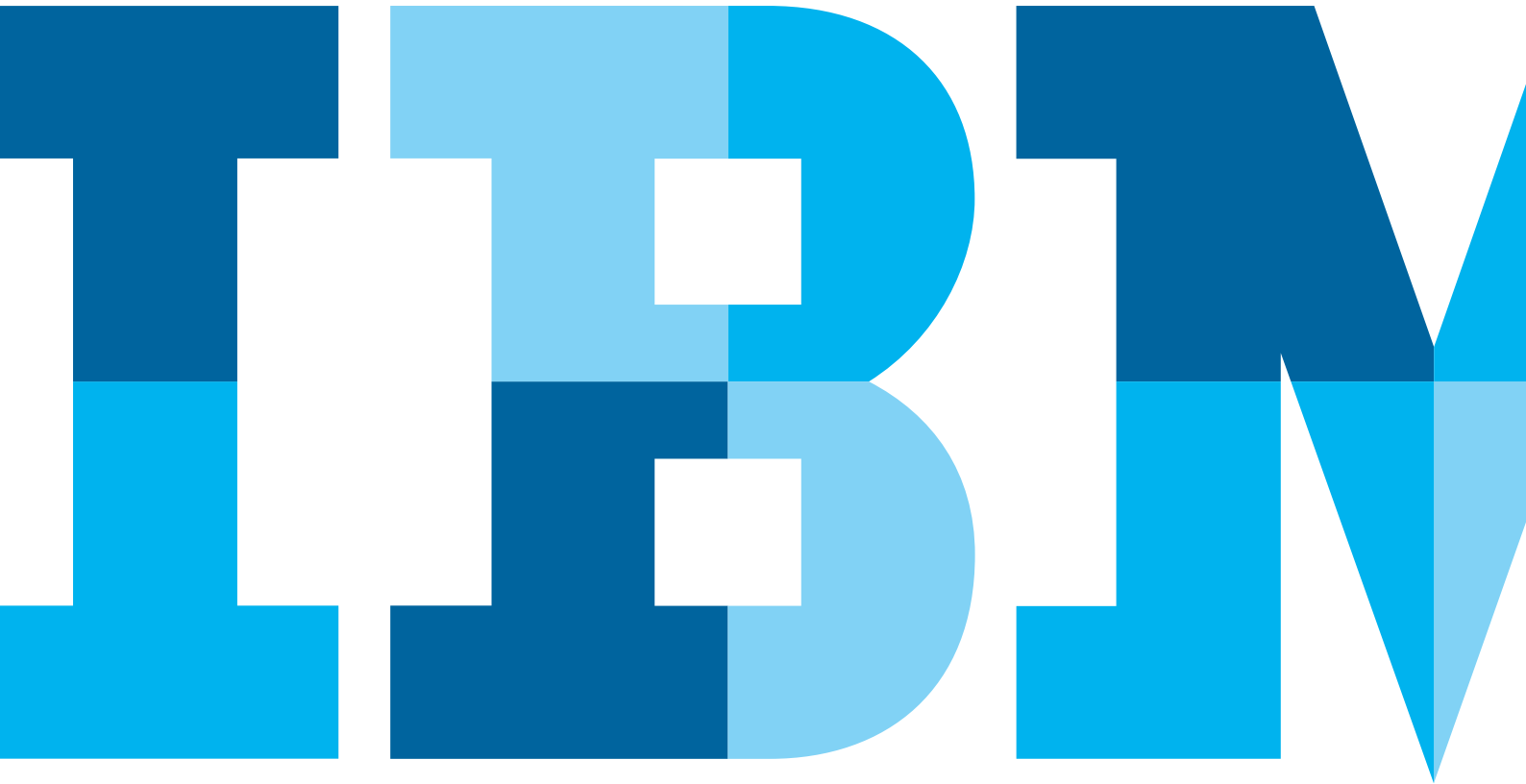


Minimize customer churn with analytics

*Understand who's likely to churn and take action
with IBM software*



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Introduction

Churn is the process of customer turnover or transition to a less profitable product. With customer churn rates as high as 30 percent per year in some global markets, identifying and retaining at-risk customers remains a top priority for communications executives. Markets are saturated, unhappy customers defect or downsize their service usage, and a class of professional churners is beginning to emerge.

With IBM Business Analytics solutions for customer churn, communications service providers (CSPs) can:

- Understand sentiment and identify social influencers.
- Analyze structured and unstructured content to predict the likelihood of churn.
- Drive revenue through personalized offers and tailored bundles.
- Create new programs to attract new customers and boost average revenue per user (ARPU).

This paper focuses on IBM Business Analytics solutions for CSPs and some of the ways you can use our software to reduce and predict churn.

Business analytics defined

You can optimize performance and use actionable insights and trusted information to make informed decisions with business analytics. By bringing together all relevant information in an organization, executives can answer fundamental questions such as *What is happening? Why is it happening? What is likely to happen in the future? and How should we plan for that future?*

IBM Business Analytics software helps your organization rise to the challenge with better business insight, planning and performance. It does this by unlocking data captured in call centers, networks and operational systems and transforming it into useful, relevant insights that drive better actions. This helps you understand what's behind critical issues, trends and opportunities and provides an accurate forward-looking view of the business.

The core components of business analytics for communication service providers include:

- **Business intelligence.** Easily find, analyze and share the information you need to improve decision-making with query, reporting, analysis, scorecards and dashboards.
- **Predictive analytics.** Discover patterns and relationships in data used to predict behaviors and optimize decision-making.
- **Analytical decision management.** Use predictive analytics, local rules, scoring and optimization techniques to empower workers and systems on the front lines to personalize customer interactions and improve business outcomes.

When using IBM Business Analytics software to reduce churn, there is a specific process:

- **Business question definition**—In this instance: Who is churning? And can we develop an action plan to combat that churn?
- **Data gathering**—Build the data sample. Summarize customer calling behavior and join with relevant information, such as demographics and billing information.

- **Feature selection**—Differentiate the factors that impact churn from those that don't. This is done through a combination of machine learning (tell me which elements are statistically relevant to the outcome) and visually inspecting the data, usually with a domain expert who identifies those attributes most likely to impact the churn decision.
- **Data mining**—Build the models to learn who is most likely to churn and why.
- **Predictive modeling**—Identify and score indicators of churn, determine which customers are most profitable to retain, and discover the right offer to retain each customer.
- **Decision management**—Deliver real-time retention offers.
- **Analysis and report generation**—Share insights and intelligence throughout your organization.

This paper describes how CSPs can use the capabilities in IBM Business Analytics software portfolio to keep customers and increase profit.

Customer churn analysis with data mining

In order to combat the high cost of churn, increasingly sophisticated techniques may be employed to analyze why customers churn and which customers are most likely to churn in the future. Such information can be used by customer service departments to actively monitor the customer call base and highlight customers who may, by the signature in their usage pattern, be thinking of migrating to another provider.

Data mining techniques bring powerful modeling analytics to the identification of the “why” and “most likely” groups. IBM SPSS® Modeler, a data mining and predictive modeling workbench, is recognized as an industry leader in the integration of data mining technologies. Based on an intuitive, visual data flow process of analysis, models and reports can be created to tackle otherwise difficult and time-consuming problems. You can use SPSS Modeler to uncover patterns and associations across siloed data sources.

Consider a dataset representing a sample of customers with descriptors such as number of minutes on long distance and local calls, financial information such as billing types and payment methods, and some demographics such as age, sex, and income. The task is to profile those customers most likely to be voluntary churners.

Next, create an association graph, a visual exploration to understand the patterns in your data. You notice that females seem likely to churn, while standard long distance billing types seem more related to not churning. This type of visual exploration of the data is often invaluable in allowing the business user to uncover patterns that the analyst didn’t realize were in the data —“I had no idea our highest churn rate was on that type of billing plan.”

West Interactive reconnects with customers

As a hosted contact center provider for many Fortune 500 and Fortune 1000 companies, West Interactive, headquartered in Omaha, Nebraska, processes millions of customer transactions every year. The company offers hosted customer contact solutions to help companies reduce costs and increase customer satisfaction.

West Interactive chose IBM Business Analytics software to help them consolidate their customer data, identify the key drivers of customer contacts and predict which customers are likely to be repeat contacts. The software also enables the company to identify customer segments with specific usage patterns and predict future customer behavior, such as which customers are likely to generate a certain type of call or deactivate their accounts or services.

The company has used the results to improve customer service, enabling personalized Interactive Voice Response (IVR) systems and routing strategies for each customer segment. The company might do that by reordering the menu for customers experiencing equipment issues, making specific technical recommendations or giving them priority access to an agent who has been specially trained to fix that exact model. The same type of priority scoring may also be employed for high-value callers to reduce the time they spend waiting for an agent, or for those callers who are determined to be at risk for deactivating their accounts or service plans, as well as those likely to place a high volume of repeat calls into the phone system.

Identify and score churn indicators with predictive modeling

SPSS Modeler relies on decision trees and neural networks when uncovering indicators of churn. Neural networks are able to uncover complex patterns in the types of customers and rank the customer base based on a score, or likelihood, to churn. Decision trees, on the other hand, build very open and interpretable models that show the analyst the patterns discovered. For example, a decision tree algorithm may discover the following rule:

If international call time is 10 minutes and the long distance bill type is standard, then churn likelihood is high.

This rule can lead to action: it may be worth calling this customer and suggesting a change of billing type to one more suited to this level of international calling.

By applying various segmentation algorithms to group people, and using automatic clustering, anomaly detection and clustering neural network techniques, you can detect unusual patterns in your data. The automatic classification function in SPSS Modeler applies multiple algorithms with a single step—taking the guesswork out of selecting the right technique.

Feature selection

Once data has been gathered from various database sources, you can then visualize and explore your data to help uncover patterns, and to create histograms, scatterplots and association graphs.

After exploring the data, the next stage is to begin modeling. The process of feature selection is important. The problem is that some modeling algorithms cannot cope with large numbers of attributes. In many real datasets, a user may have hundreds of attributes, and this can lead to poor performance of the modeling algorithm. SPSS Modeler reduces the number of attributes to the core set of highly indicative attributes. For example, XO Communications started with over 500 possible attributes that could lead to churn. Using business analytics, however, the company was then able to pinpoint 25 of the best indicators.

Once the key indicators are identified, the customers may be sorted into a ranked list of high probability to churn down to the least likely to churn, the loyal customers.

XO Communications maintains a “healthy” customer base

XO Communications is a US-based national communications service provider of VoIP, voice, network, carrier, wholesale and hosted services. The provider needed a way to reduce customer churn because it knew that it is more cost-effective to retain customers than to acquire new ones.

XO Communications deployed IBM Business Analytics to identify at-risk customers, enabling client services agents to focus their proactive outbound “health check” calls. Using a sophisticated statistical model that provides a monthly risk assessment for each customer, client service teams are able to contact high-risk customers, find out if they have any problems or are dissatisfied with the service they are receiving, and then take appropriate steps to improve the situation.

As a result, the provider reduced customer churn from 1.9 percent to 1.4 percent in the first year, and increased retention rates by 60 percent. The company’s new ability to pinpoint and preempt customer churn delivers a 376 percent annual return on investment. The project paid for itself within five months, and provides an annual net benefit of over \$3.8 million.

Include customer sentiment and social media data for richer predictive models

In order for your models to produce a true 360-view of your customers, however, you should be able to include data from unstructured sources, such as call center notes, survey data and social media.

Using text analytics capabilities within SPSS Modeler, for example, lets you transform unstructured survey text into quantitative data and gain insight using sentiment analysis. Discover value in previously untapped, unstructured customer interactions from a variety of sources, including survey responses and call center interactions. Build visual dashboards to illustrate aggregate patterns around customer satisfaction or customer pain points, and drill down and filter these patterns according to particular customer segments.

You can also use IBM® Social Media Analytics to analyze billions of social media comments. With key behavioral, demographic, geographic, influencer analysis and advanced analytics discovery capabilities, IBM Social Media Analytics helps CSPs go beyond mere social media “listening.” You can use social media to gain insight into consumer opinions and spot trends related to products and brands. An analytic application with unmatched scalability, IBM Social Media Analytics helps you learn what consumers are hearing and saying about your company. It enables you to answer questions such as: *What are the most highly valued product attributes in our category? Which messages from our competitors are resonating in the marketplace? and Are there negative comments that our public relations team should address? Are the comments true or false?*

IBM Social Media Analytics accomplishes all this by retrieving data in the form of fragments or “snippets” of text from publicly available social media channels based on queries that search for specific words or phrases. The data collected in the search result is then loaded into a database and made available for analysis. When drilling down and analyzing these areas further, you can identify what people are talking about in relationship to other concepts (“share of voice”), as well as where, when, and whether these concepts are being talked about in a positive, negative, neutral or ambivalent tone.



Figure 1: IBM Social Media Analytics captures “snippets” of social data to help you determine the concepts, products or services that are being talked about — in this case, customer service, network quality of service and smart phones.

By combining customer sentiment and social media data with predictive capabilities, you better understand key indicators of churn—and provide your entire organization with valuable information that helps minimize the loss of revenue through churn.

Target promotions and determine profitability

Even when scoring models have been built, the analysis is far from over. In some ways it has only just begun. The reason is that there are many ways to use a churn-scoring model—all governed by the business task and problem being tackled. If the goal is to “touch” all customers no matter the cost, then we don’t even need a model. If the goal is to maximize the return on a marketing budget of a fixed amount, then modeling is critical. Other issues such as customer value begin to play a part. What to do with customers who are likely to churn but do not use their mobile phones? If the CSP isn’t making money from these customers, should they just let the customers go?

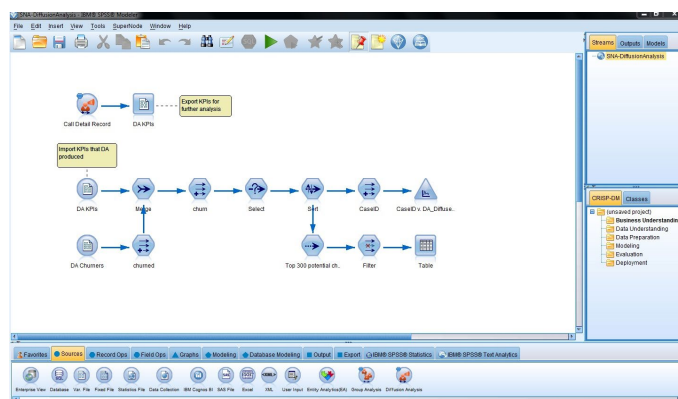


Figure 2: SPSS Modeler uses data mining to uncover hidden patterns in your data and identify the key indicators of customer churn.

Social network analysis is a built-in capability of SPSS Modeler that enables you to identify those customers who have a strong sphere of influence and are valuable. Social network analytics complements and enhances traditional solutions by considering social churn factors. Identify groups, group leaders and whether others will churn based on their influence. It consists of two capabilities that help models predict churn:

- **Group analysis**—Identify the groups in the data and the leaders of each group.
- **Diffusion analysis**—Use existing churn information to determine who the current churners are and what will influence them to leave.

This allows CSPs to proactively identify potential churners and pursue them for retention, based on “early warnings.” For example, one customer can be identified as a potential target as soon as a number of her close friends churn. This is different from traditional solutions where typically a customer is flagged when there is noticeable change in her recent usage profile (e.g. reduced spending, prepaid card not recharged etc.) — by which time she might have already decided to churn.

Using IBM Business Analytics software, reports can be created that indicate where to draw the line in customer targeting campaigns, taking into account propensity to churn and customer value (profitability). You can calculate

the net campaign gain based on parameters such as the cost of contacting each customer and the discount rate offered to entice that customer to stay. Other factors relevant to your company’s particular business problem can easily be added into the analysis.

The final report may be a list of customer IDs and a predicted maximum campaign gain. Once you understand which customers are likely to churn and the profitability of each customer, then you can determine which offers will help you likely retain your most valuable customers.

Deliver the next best offer with analytical decision management

Perhaps the most important phase of using analytics to minimize churn is ensuring that analytic results and predictive insights reach the people, processes and systems that touch your customers. That’s where IBM Analytical Decision Management comes in. It delivers customer insights directly to call center agents and systems on the front lines.

Built specifically for the line-of-business person, IBM Analytical Decision Management provides an easy-to-understand user interface to help your people build stronger, more profitable customer relationships. By creating a personalized experience for every customer and prospect—whether they interact with you by phone, web, point-of-sale or email—this solution can help you retain customers, grow revenue and drive profits.

It combines local rules, predictive analytics, optimization and scoring to determine quickly which inbound interactions are the best candidates for a retention offer—and then deploys personalized, real-time recommendations that have the greatest likelihood of acceptance by the customer. This technology leverages all of your customer information—including transactions, purchases, call histories and web site visits—to recommend the best action your staff and systems should take. Real-time capabilities enable the solution to make recommendations based on the most up-to-date customer information available, including information from other channels, back office systems and real-time information entered by the end user.

For example, when a customer calls in to complain about a poor network experience, the call center agent can view a variety of information such as the customer's former level of satisfaction, the customer's lifetime revenue potential and how likely the customer is to leave. Then the best offer for that customer is delivered directly to a dashboard on the call center agent's screen.

In addition, IBM Analytical Decision Management helps your company be proactive. It doesn't wait for a customer to call in to complain. It's constantly monitoring customers and issues and can proactively trigger outreach to customers through marketing automation systems, text or outbound calls, enabling your company to minimize churn and increase customer satisfaction.

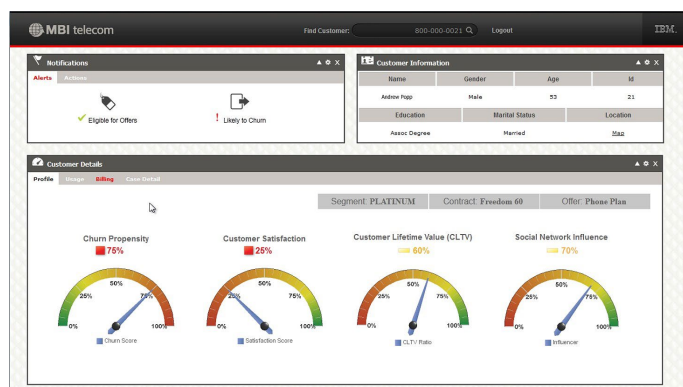


Figure 3: Through the IBM Analytical Decision Management interface, call center representatives can view the likelihood of churn, customer satisfaction levels, customer lifetime value and even social network influence—all while speaking with the customer. Then, a representative can deliver a targeted offer to that customer to keep her from churning.

Sogecable makes call center communications count

Sogecable, a major European telecommunications provider, wanted to optimize its customer call center interactions by enabling agents to conduct personalized conversations with clients instead of using traditional standard scripts.

Using an IBM Business Analytics solution, call center agents gained instant and reliable information on each client in a pop-up window, including key details from customer contracts and the products they had purchased. Furthermore, this screen provides recommendations and personalized messages which are key to empowering agents to perform their customer retention activities more successfully and to increase sales to those customers.

The firm gained the ability to quickly perform statistical analyses and create predictive models. It was able to recognize segmentation of inbound calls—ultimately improving its customer acquisition and retention in only two months.

Share insights and report results with business intelligence

When using IBM Business Analytics software to reduce churn, it's essential to know what is working and what is not, so that you can share that information immediately with all relevant stakeholders throughout your organization.

IBM Cognos® Business Intelligence is an advanced business intelligence platform that provides that capability, and much more. It enables stakeholders to interact, search and assemble all perspectives of your business in a single place so they can make smarter decisions and outperform the competition.

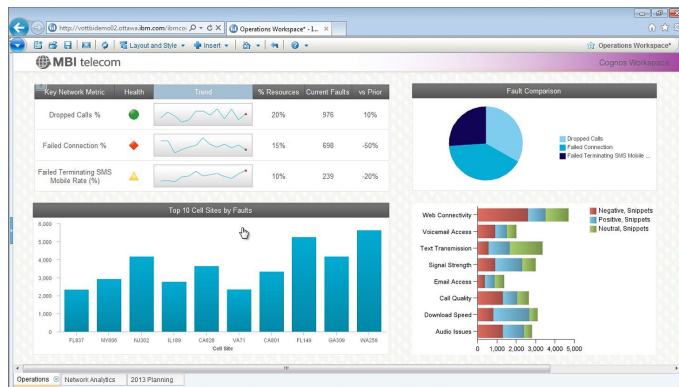


Figure 4: With Cognos Business Intelligence, business users gain deep insight into current trends affecting customer service so they act quickly, focusing on the factors of dissatisfaction and sharing key performance indicators across the organization.

With Cognos Business Intelligence, you can:

- Quickly react to dynamic market changes and new opportunities.
- Understand marketing performance from first touch to revenue close.
- Answer key business questions quickly.
- Rebalance time and resources for the biggest returns.
- Drill down within data to uncover customer, sales and market sector trends.
- Monitor product trends and identify areas of improvement to ensure growth and success.
- Communicate insights instantly with team members through built-in social network capabilities.

Through metrics, reports, dashboards and statistics, it helps your team find correlations between the various factors that affect the performance of customer-facing tactics, and identify new opportunities within customer segments. That means everyone from CMOs, brand managers, marketing operations analysts, customer service managers and campaign strategists can benefit. They can instantly access relevant information, including historical views, real-time data, and predictions. They can also analyze churn trends, engage in root cause analysis, build scenarios, gain actionable insight and make corrections when and where they need to get the job done.

Conclusion: Prevent and predict customer churn with IBM

In an age of increasing customer demands and heightened competition, retaining customers is critical. Working together, IBM Business Analytics technologies provide an advanced, effective solution to help CSPs gain in-depth insight into individual customer behaviors and deliver targeted, optimized offers at the point of impact.

CSPs that outperform use IBM Business Analytics. With over 40 years of experience in analytics and a proven, industry-based best practice approach, only IBM offers:

- A complete range of integrated capabilities including reporting, analysis, dashboarding, scorecarding, content analytics, “what-if” scenario modeling, predictive analytics and planning, budgeting and forecasting.
- An open enterprise-class platform to cost-effectively deliver complete, consistent and timely information (can be historical, real-time and predictive) to decision makers throughout your organization.
- Packaged reporting and analyses based on proven best practices, with a comprehensive portfolio that covers workforce, customer, finance and supply chain.
- Solutions that scale well from the desktop to the enterprise, including the only complete, integrated solution purpose-built for midsize organizations.

To find out more about how IBM Business Analytics software can help your company minimize churn and maximize profits, please visit: ibm.com/software/analytics/solutions/customer-churn/

About IBM Business Analytics

IBM Business Analytics software delivers data-driven insights that help organizations work smarter and outperform their peers. This comprehensive portfolio includes solutions for business intelligence, predictive analytics and decision management, performance management, and risk management.

Business Analytics solutions enable companies to identify and visualize trends and patterns in areas, such as customer analytics, that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, better plan, budget and forecast resources, balance risks against expected returns and work to meet regulatory requirements. By making analytics widely available, organizations can align tactical and strategic decision-making to achieve business goals. For further information please visit ibm.com/business-analytics.

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