

# AI & Network Analytics: An intelligent approach to win back lost customers

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In today's era where customers are inundated with choices, enterprises constantly innovate how they interact and engage with customers to stay relevant. Digitizing the customer relationship management (CRM) department for managing customer relations is not only lucrative but also essential to cultivate customer loyalty. Many enterprises such as banks, product-based and service-based businesses, etc., place a lot of importance on adopting digital technologies and AI-based approaches for customer analytics.

Understanding the customer journey and predicting customer churn to take a proactive decision is essential for marketing. Acquisition of new customers is more expensive than managing the existing customer base through different loyalty campaigns. Therefore, organizations spend a lot of time and effort avoiding customer churns and implementing marketing strategies to bring the lost customers back into the fold. The primary responsibility for this lies with the CRM team, which monitors and manages all customer interactions.

As the world grows increasingly digital, information is readily available for customers, making customers more aware of the competitors who are vying to gain your customers' attention and eventually their business. In this information-based market scenario, it's not easy to keep customers from moving from one service or product to another quickly. This is invariably a risk factor for enterprise growth and needs to be dealt with promptly with a strategic approach.

The traditional approaches commonly used by enterprises are no longer producing the expected results or are less effective in retaining the customer base. Innovation in customer retention strategy with an AI-based approach is a win-win situation for the customer as well as the enterprises. This analytical approach will:

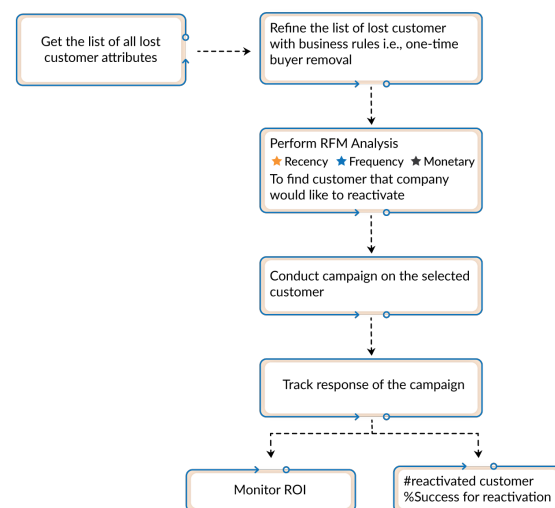
- Provide in-depth insights about an existing customer's purchase in real-time.
- Assist in the dissemination of timely and relevant information to customers.

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- Assist in identifying the most engaged and active client segments.
- Identify customers who are about to become inactive or non-responsive ahead of time.
- Identification of key attributes to reactivate a customer through machine learning models.
- Conduct a multi-channel marketing strategy with efficient communications and offers.
- Customer network visualization to identify customers with similar purchasing behavior and other attributes.

The traditional approach for customer reactivation is shown below for reference:



Our graph analytic approach uses the 360-degree profile of existing and lost customers along with external data sources to reactivate the lost customer. At the outset, we need to look at the various attributes of all the customers that are active or lost:

- What is the contribution of the top 20% of customers across the product/service categories?
- What is the average, maximum, or minimum number of transactions by touchpoints?
- How are the customers distributed across the product/service categories?
- What is the distribution of customers by age and gender?
- How long have the customers been with the business?
- What is the distribution of married and unmarried customers across the product?
- What is the distribution of customers having children or otherwise across the product?
- When are customers likely to do more transactions?

Organizations need a solution to reactivate customers based on internal and external attributes that will help estimate the size of the customer wallet. Building such a solution requires both internal and external data sources, which are equally important.

## What are Internal and External data?

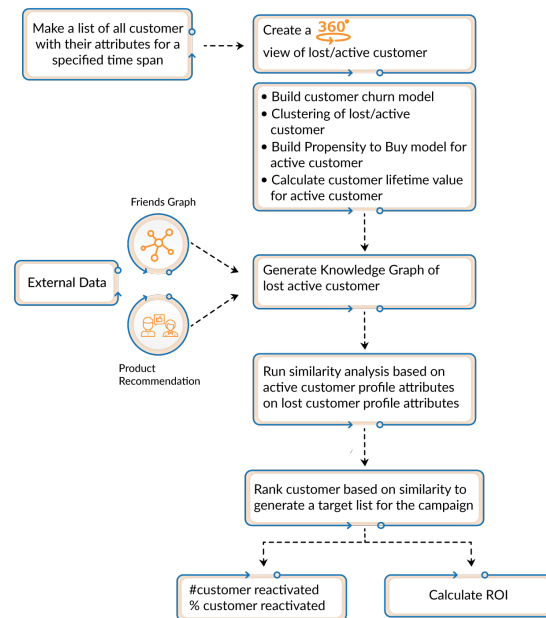
### Internal data

- Customer segment-based view (e.g., the contribution from top 30% of customers across the product/service categories)
- Salary data if they hold a salary account
- Earnings data and business-related data, if they own a business
- Aggregating data from the organization's different LOBs, cross-holding with satisfaction ratings

### External data

- LinkedIn, Glassdoor, government employment data, 3rd party data sources, etc.
- Company names, title/position, education/institute, industry CIK, work experience, prevailing wages, affinity groups, etc.

A combination of internal & external data is ideal for modeling the current or potential customer value.



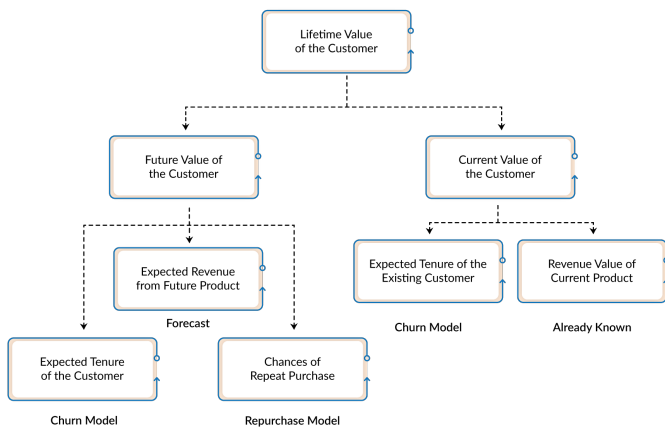
Network Analysis is a new method that competes with Latent Variable models in inferring client purchasing behavioral characteristics. Purchasing behavioral traits are extracted from a complicated system of components using Network Analysis, which eliminates the requirement for any latent variables. However, Network Analysis fails to accurately describe the ontological state of purchasing behavioral characteristics because purchasing behavioral attributes is both a complex system and a property arising from that complex system. The purpose of this paper is to re-evaluate the validity of latent variable models by participating in an ontological and epistemological debate over purchasing behavioral traits and possible earning potential. New techniques that combine Latent Network Models and Network Residuals are potentially new ways to infer purchase behavioral features in an inter-subjective dynamic manner. If we want to employ latent variables as representations of purchase behavioral traits and prospect earning potential, pragmatism-realism appears to be the scientific framework necessary. This approach will help to recognize various patterns in the customer attributes to prepare the strategy for customer management and acquisition.

## Proposed Approach

Our solution uses historical data related to customer attributes, transactions, social economy information,

social or professional networks. To explain the methodology technically, we use a combination of machine learning models and graph-based analytical modeling to arrive at potential and current customer value. The machine learning model includes churn prediction, customer segmentation, customer propensity to buy, customer lifetime value prediction, etc. The approach and framework used to estimate the lifetime value of a customer is shown in the figure below. Value from a customer will be derived from two sources:

- Future revenue on current product held by the customer
- Initial and renewal premium payments on the product the customer is expected to purchase in the future



While the customer churn model is used to estimate the expected remaining tenure of a customer, over which they are expected to make transactions on existing as well as expected future purchases, a repurchase model was built to estimate the probability that a customer will purchase another product over their remaining tenure. Based on the customer value and share wallet map, our solution provides insights and a target list of customers for relevant campaigns for customer reactivation.

## Our Goal

Machine learning and graph analytics-based solution for customer reactivation program better predicts active customers in the risk bucket of attrition and who could become lost customers in the future. In addition, our approach helps in specifying deliverables with in-depth explanations: i.e., if the focus is on marketing acquisition campaigns, define the channels proposed (generation of prospect lists, what are the variables that will be

provided?)

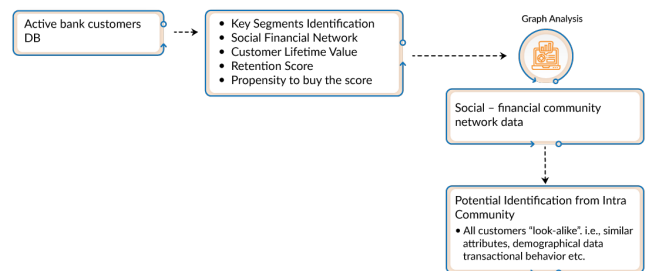
Analyzing past campaigns provides deeper insights into the acquisition campaign's effectiveness when the organizations provide past A/B testing details of campaigns.

- Pull channels (customer touchpoints) should be campaign enabled.
- Push channels multistep campaigns are more preferred should follow a robust A/B testing process, including the content of the campaign
- Digital Response tracking of alert pop-ups is possible through Pixel ID and weblog data

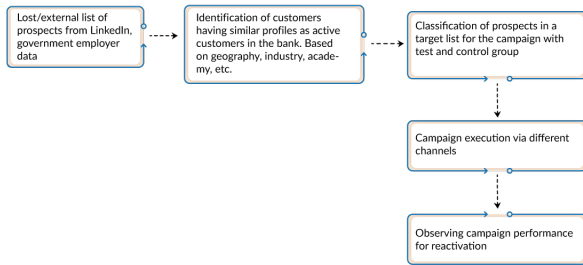
## Sample Use Case: Banking

An industry use case about the process of customer reactivation or "customer win back" for a bank is detailed in the graph below. The process begins with a 360-degree view of the existing customer in the bank. Several machine learning models need to be built and scored to get a complete view of the customer attributes. The score of these models will be used to identify or detect the different segments of the existing active customers using graph analysis or network analysis. The insights from the model help generate the list of inactive or churned customers as well as an external list of prospect customers. This list of customers aids in identifying customers with similar behavior patterns in the existing active customers of the banks. The identification of similar prospects will be made based on the similarity analysis. The final list of prospects is targeted with personalized marketing campaigns to reactivate lost customers to engage and bring them back to the fold. Finally, the campaign performance is tracked with a return-on-investment analysis. The process is shown in detail below:

### Step 1



**Step 2**



The illustrative process above shows how to use AI, machine learning, and network analysis to reactivate the customers of a bank. This approach uses hybrid machine learning models to proactively predict the customer churn and help find the key attributes about the lost customer to reactivate them. This approach is more beneficial than the traditional approach for reactivating the customers and getting new customers

with similar profiles.

Customer reactivation is a process where companies analyze which consumers have become inactive at what point in time and then approach them with various techniques such as offers or benefits via multiple channels. Existing methods have difficulty distinguishing between active and inactive clients, and do not provide calendar time estimations for reactivation outreach. To address these flaws, we devise a strategy for delivering reactivation communication that is both targeted and timed. Estimating the average consumer inter purchase time and its variation helps identify the criteria for inactive customers. When these boundaries are crossed, an inactivity signal is generated, which should trigger the reactivation activities. Our approach uses different ML algorithms to predict customer churn, customer repurchase, and expected customer lifetime value to help the organization track and identify the customers who are about to be inactive or already lost.

# Author

Anshul brings 14+ years of experience in leveraging ML/AI to solve business problems. He holds a BS and MS in Applied Statistics, and a PhD in Management.

# About

Mastech InfoTrellis partners with enterprises to help them achieve their business objectives by leveraging the power of data to derive deep, analytical insights about their business and its operations. We accelerate business velocity, minimize costs, and drastically improve corporate resiliency through personalized, process-oriented programs, consisting of strategy, data management (including master data management), business intelligence and reporting, data engineering, predictive analytics, and advanced analytics. Part of the NYSE-listed, \$193.6M, digital transformation IT services company, Mastech Digital; we drive businesses forward around the world, with offices spread across the US, Canada, India, Singapore, UK, and Ireland.