

## Customer Acquisition through Time-Aware Marketing Campaign Analysis in Banking Industry

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**Abstract :** Customer acquisition has become one of the critical issues of any business in the 21st century; having a healthy customer base is the essential asset of the bank business. Term deposits act as a major source of cheap funds for the banks to invest and benefit from interest rate arbitrage. To attract customers, the marketing campaigns at most financial institutions consist of multiple outbound telephonic calls with more than one contact to a customer which is a very time-consuming process. Therefore, customized direct marketing has become more critical than ever for attracting new clients. As customer acquisition is becoming more difficult to archive, having an intelligent and redefined list is necessary to sell a product smartly. Our aim of this research is to increase the effectiveness of campaigns by predicting customers who will most likely subscribe to the fixed deposit and suggest the most suitable month to reach out to customers. We design a Time Aware Upsell Prediction Framework (TAUPF) using two different approaches, with an aim to find the best approach and technique to build the prediction model. TAUPF is implemented using Upsell Prediction Approach (UPA) and Clustered Upsell Prediction Approach (CUPA). We also address the data imbalance problem by examining and comparing different methods of sampling (Up-sampling and down-sampling). Our results have shown building such a model is quite feasible and profitable for the financial institutions. The Time Aware Upsell Prediction Framework (TAUPF) can be easily used in any industry such as telecom, automobile, tourism, etc. where the TAUPF (Clustered Upsell Prediction Approach (CUPA) or Upsell Prediction Approach (UPA)) holds valid. In our case, CUPA books more reliable. As proven in our research, one of the most important challenges is to define measures which have enough predictive power as the subscription to a fixed deposit depends on highly ambiguous situations and cannot be easily isolated. While we have shown the practicality of time-aware upsell prediction model where financial institutions can benefit from contacting the customers at the specified month, further research needs to be done to understand the specific time of the day. In addition, a further empirical/pilot study on real live customer needs to be conducted to prove the effectiveness of the model in the real world.

**Keywords :** customer acquisition, predictive analysis, targeted marketing, time-aware analysis

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