Enhanced CRM System to Predict Customer Buying Patterns for Improved Sales Decision Support

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ABSTRACT

The study seeks to design a flexible CRM system that provides more insight and timely sales dealership decision-support. The model looks to develop predictive capabilities of when a lead will be in the market for a product. It is based on feature generation using data from previous purchases, web search activity, demographics, and product attributes. Predictions and recommendations from our model are currently being piloted by a few dealerships to estimate average overall dealership performance changes compared to a control group of similar dealerships.

INTRODUCTION

The ability to strategically target a potential customer is a key aspect for in B2B dealership sales models. This level of business intelligence can either make or break a sales opportunity. In collaboration with a multinational capital goods manufacturer with over thousand dealerships in the USA, we developed an enhanced CRM (customer relationship management) system that predicts when a customer will be in the market for a specific product.

Fig 1. Capital Goods market has unpredictable demand patterns

The primary research questions of this study:

- How to build predictive buying patterns by analyzing web activity and commercial transactional history?
- How to highlight customers who were visible as hot lead but were lost to other brands?

LITERATURE REVIEW

Author, Year	BP Neural Network	Artificial Neural Network	K-means Clustering	Random Forest	Bayesian Models
H Ihnatovich, 2017		✓			
P Norlin, 2017			✓	✓	
J Bergman, 2017					✓
Y Hu, 2014	✓				

Table 1: Literature review summary by method used

After discussing and evaluating various modeling approaches, we went ahead with Random Forest classifier for our study as it was more relevant for our business context.

METHODOLOGY

The data consists of multiple data sets, that include customer information, product information, purchase history and details about customer web search activity. These details were used to glean insights on customer web activity and how it translates to the eventual purchase. Competitors' product details are also included to provide market share details.

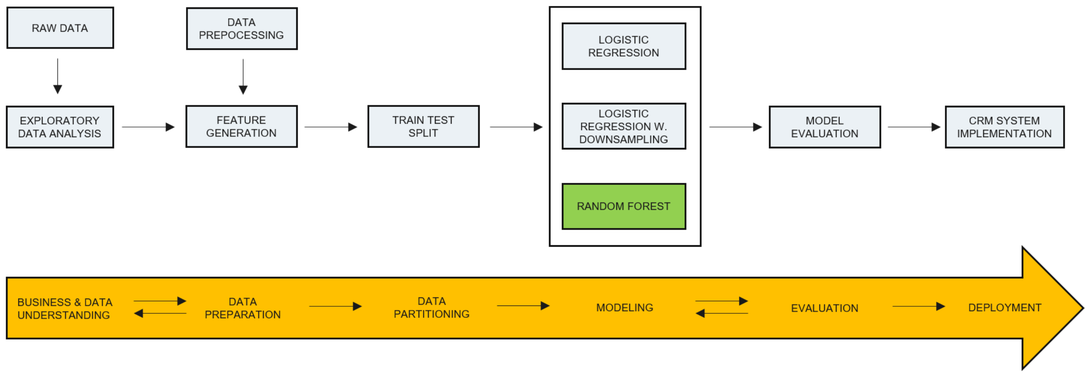

Fig 2. Process Flow

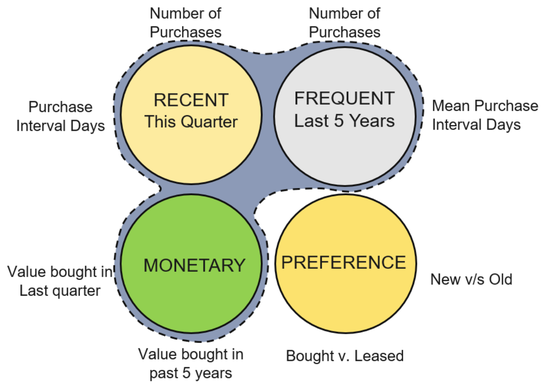

Fig 3. Feature Generation

RESULTS

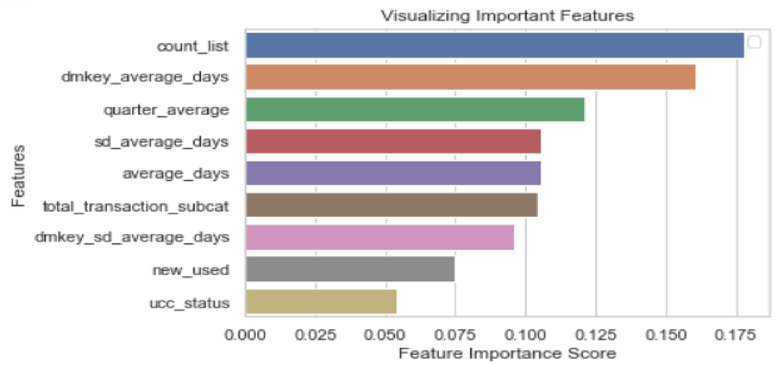

Fig 4. Key modeling features, ranked by their importance

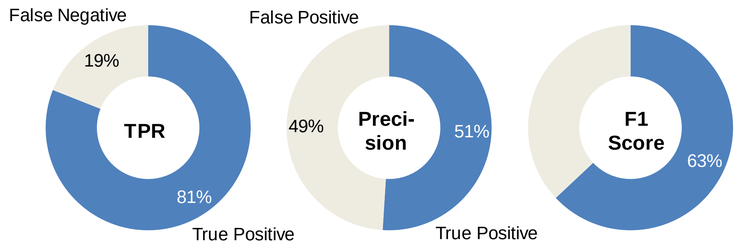

Fig 5. Key Features used in modeling and accuracy scores

CONCLUSIONS

Our study provides a novel application of operationalizing data science to support industrial equipment sales. In an industry where this is little to no brand loyalty such as our case study, failure to adhere to customer demands by taking appropriate decision-support in time could lead to churn, and eventually loss in market share. Studying customer buying patterns and their web searches on the company website for specific products could lead to a CRM system that would help on-the-ground team members improve their sales performance and customer relationships.

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