

Case study on Loan application screening and aspect of Fair lending practice

Context:

For a financial organization in the business of lending money, understanding risk profile of a customer is central to lending money in the form of a structured product. Improper understanding of the risk profile of a customer carries two types of risks i.e. risk of losing money by lending it to an unworthy customer (who either intentionally or due to circumstances can't pay it back) and second is opportunity cost of declining credit to a worthy customer.

While understanding the risk profile is important, it is critical that lenders don't base their decisions which may come across as biased and unfair on account of a customer's race, religion, nation of origin, gender, and age etc. In US, the Fair Housing Act (FHA) and the Equal Credit Opportunity Act (ECOA) protect consumers by prohibiting unfair and discriminatory practices while lending and ensure the same lending opportunity to everyone.

Risk profile should therefore be focused on relevant qualitative and quantitative aspects of a customer such as past credit behavior, credit worthiness and loan related attributes for any past or present lending relationship with other lenders

Content:

Inside the following dataset, there are around 42,000 loan accounts, booked in between 2007 to 2011, with some demographic and credit bureau attributes along with current loan status. Credit bureau is an agency, which collects credit performance related information for every customer from banks. This information can be summarized into attributes which can tell about any customer's historical credit behavior. Loan status tells about how the loan is performing currently, i.e. if the loan is delinquent or the customer has missed any payment or if the loan is already fully paid or charged off or the loan is doing well and paying on time.

Questions:

1. As a decision maker, looking into these given booked accounts, how would you want to take a decision to approve/ decline the same applications again in future? What would be your screening criterion(s), if any?
2. Please provide data driven rationale to substantiate the appropriateness of the characteristics you have identified in the screening logic
3. Given that you have a decision engine, which helps you to take a call based on the given data, how would you identify if your process has an unintentional bias and discriminate your customers based on some of the sensitive attributes, available in this dataset?