Sample Introduction

Predicting partial churn of air cargo forwarders

1. Introduction

"Conventional business wisdom contends that it costs 10 times as much to obtain a new customer as it does to retain an existing customer." (Daly, 2002). While the height in difference in costs between obtaining and retaining customers is subject to debate, there is no debate that the difference exists. It is therefore not surprising that much research has been done on predicting customer churn in order to take actions to retain customers. Customer Churn refers to loss of customers or loss of part of their spending. Churn does not have a single definition. The specific definition depends on the field of study, purpose of study and data available. In this study churn is related to a loss in share of wallet. Share of wallet is the part spent at a specific company divided by the total spending of a customer. Verbeke et al. (2010) gives an overview of many different methods for modeling from seventeen different studies on churn, while adding two new methods in the process. Besides churn studies using different modeling methods, further differentiation can be found in targeted markets and data sources used. One specific difference which can be found is on the contractual setting. Most studies have focused on churn in a contractual setting (Nie et al., 2011) since in many markets a long term contractual agreement is standard business, e.g. telecom, energy or finance. Few studies have focused on non-contractual setting (Buckinx and Van den Poel 2004, Miguéis et al., 2012, Jahromi et al., 2014).

One of the main obstacles churn studies in non-contractual setting face is the issue of not being able "to capture the amount of products that this customer purchases at competing stores."(Buckinx et al., 2005). In contrast, for air cargo market we are in the unique position to have broad insight in customer churn across multiple companies. The lack of insight in competitors business is tackled by Buckinx et al. (2005) and Jahromi (2014) by focusing on "predicting inactivity". Since this study does have sufficient insight, this study focuses on share of wallet, hereby predicting *activity*; customer spending moving from one airline to another.

The objective of this study is to determine relations between past air cargo transactions and the probability of churn or partial-churn of a customer (a forwarder) of an airline. This study offers some important insights into this. The proposed model can help airlines to support their marketing strategy. Model predictions can be used to identify forwarders which are prone to churn. This group can then be specifically targeted to reduce the risk of churning. Although the model is specifically designed for the air cargo market, the principles for developing such a model could be used for similar markets too.

The research data in this paper is drawn from WorldACD, an Amsterdam based air cargo market data analyst. The dataset contains over 220 million air waybill (AWB) records, each record containing information of a single shipment. This study uses a quantitative approach to produce a predictive model. Two methods are used: logistic regression and neural networks.

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This paper has been divided into three parts. The first part elaborates on the data set used and procedures followed. The second part highlights the results and findings. To conclude, the third part presents the conclusions, implications of the study and suggestions for further research.