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Chapter 8
Discovering Behavioural Patterns within Customer Population by using Temporal Data Subsets

Goran Klepac
Raiffeisenbank Austria d.d., Croatia

ABSTRACT

Chapter represents discovering behavioural patterns within non-temporal and temporal data subsets related to customer churn. Traditional approach, based on using conventional data mining techniques, is not a guarantee for discovering valuable patterns, which could be useful for decision support. Business case, as a part of the text, illustrates such type of situation, where an additional data set has been chosen for finding useful patterns. Chosen data set with temporal characteristics was the key factor after applying REFII model on it, for finding behavioural customer patterns and for understanding causes of the increasing churn trends within observed portfolio. Text gives a methodological framework for churn problem solution, from customer value calculation, to developing predictive churn model, as well as using additional data sources in a situation where conventional approaches in churn analytics do not provide enough information for qualitative decision support. Revealed knowledge was a base for better understanding of customer needs and expectations.

1. INTRODUCTION

Understanding of customer behaviour is a key factor of market success, especially in competitive market conditions (Bang, 2009; Berry, 1997; Berry, 2000; Giudici, 2003).

Extracting important behavioural information from transactional customer data, and enabling better decision-making throughout an organization is one of the aims when a company wants to understand their customers (Hemalatha, 2012).

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New era of big data and social networks contributes in complexity of data sources for analytical purposes, and offers new challenges and also additional useful information for understanding customer behaviour (Scot, 2012; Raine, 2012). That leads us to taking in account social network analysis as an important factor for understanding hidden relations within a portfolio.

One of the frequent topics related to customer behaviour, which is important for business, is a problem of churn detection and churn mitigation (Hadden, 2006; Rashid, 2010).

Churn detection and nature of churn is closely related to customer behaviour patterns. Understanding of customer behaviour, leads us to finding solutions for successful churn detection and mitigation.

Telecom industry is very interested in churn issues. Because of that fact, the presented case study, which connects consumer behaviour, churn detection and mitigation will be from the telecom industry.

Churn detection and mitigation is also a frequent topic in data mining literature (Berry, 1997; Berry, 2000; Giudici, 2003). Telecommunication companies are also interested in churn problem solving, especially in dynamic market environment (Klepac, 2006). Customer acquisition is important, but only as a starting point of each customer lifetime cycle. Companies attempt to extend customer lifetime period as long as possible in order to return initial costs and to make profit.

Production control, planning, and scheduling are forms of decision making, which play a crucial role in manufacturing industries. In the current competitive environment, effective decision-making has become a necessity for survival in the marketplace. (Elamvazuthi, 2012)

Telecom companies are no exception, and they also use advanced analytical models for better decision making in everyday business.

With the evolution of wireless technologies, mobile networks can provide much more interesting services and resources to users than before. Consequently storing, sharing and delivering resources efficiently have become popular topics in the field of mobile networks. (Feng, 2009)

This is not the case only for wireless technologies, but for the telecom industry in general, and the other industries as well, which act in competitive environment.

Churn modelling trend is present in technologies like IP TV, fixed phone line, and other services provided by telecom companies.

There are many areas in telecom companies in which collected data could be useful for decision-making, and churn is one of them (Hemalatha, 2012).

Churn prediction modelling is one of the major tasks in successful churn mitigation (Abbasimehr, 2011).

Predictive data mining techniques play a major role in predictive churn model development (Kotsiantis, 2009).

The reasons for customer churn are diverse. They range from the unexpected moves of competitors trying to gain a bigger piece of the market share by using swift campaigns (possibly directly endangering your company's market position) to the unsatisfied clients suddenly starting to churn (Berry, 2000).

There are no available cookbook methodologies regarding churn detection and churn prediction. In general, we can talk about some common approaches in churn detection (Giudici, 2009), but it depends on situation and business area for which we try to build an adequate model.

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