Chapter 7

Network-Based Targeting: Big Data Application in Mobile Industry

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ABSTRACT

This chapter focuses on two kinds of targeting in mobile industry: to target churning customers and to target potential customers. These two targeting strategies are very important goals in Customer Relationship Management (CRM). In the first part of the chapter, the author reviews churn prediction models and its applications. In the second part of the chapter, traditional innovation diffusion models are reviewed and agent-based models are explained in detail. Customers in telecom industry are usually connected by large and complex networks. To understand how network effects and consumer behaviors – such as churning and adopting – interplays with each other is of great significance. Therefore, detailed examples are given to network-based targeting analysis.

INTRODUCTION

According to statistics from International Telecommunication Union (ITU), there will be more than 7 billion mobile cellular subscriptions by end 2015, corresponding to a penetration rate of 97%. In developed regions, penetration rates are much higher.

DOI: 10.4018/978-1-5225-1750-4.ch007

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For example, mobile subscriber penetration rate in Hong Kong reached 232.2% in April 2015 (Office of the Communications Authority, 2015). Mobile Internet connection are getting cheaper and easier thanks to technological progress, infrastructure deployment, and dropping prices. Globally, mobile broadband penetration reaches 47% in 2015, a value that increased 12 times since 2007 (ITU, 2015). All these figures give evidence to one bold prediction “Mobile to overtake fixed Internet access by 2014” made by Mary Meeker, an analyst at Kleiner Perkins Caufield Byers (KPCB) who reviews technology trends annually. With such an increasing customer base and huge potential market, companies are facing great opportunities to enlarge their existing market and gain more profit. Yet, their competitors are also preparing themselves to share this big market. Fierce competition makes customer retention and customer acquisition more difficult than ever before.

Consumers have many choices over mobile service providers and mobile devices providers. For mobile service provider, to keep the existing customer from churn- ing is the main focus of their CRM as customer churn often entails great loss to mobile service providers. Whereas, for mobile device providers, they often launch new handsets every year to attract new customers or allure existing customers to upgrade their devices. Therefore, mobile device providers focus more on customer acquisition. According to Recon Analytics (Entner, 2011), American people replace mobile phones every two years.

This chapter will focus on the first step in customer retention strategy and customer acquisition strategy: targeting. Targeting is of great importance in CRM. If targeting goes wrong, companies will waste resources and efforts in marketing practice, leading to great financial loss. With such large and diverse customer base, customer related data in mobile industry is often very big. In order to properly process and analyze these data, big data applications are necessary. One important big data application in mobile industry is targeting. This chapter will focus on such models and applications. Especially, network-based targeting analysis will be emphasized. The whole chapter will be arranged as follows. The next section will introduce the background of this chapter. Then the author reviews models and applications in two kinds of targeting: targeting churning customers and targeting potential customers. Lastly, the conclusion of this chapter is given.

**BACKGROUND**

For any company, customer loyalty is an essential part for profit maximization. To obtain customer loyalty involves two steps: obtaining new customers and then keep them from churning. The first step is called customer acquisition and the second is customer retention. Actually customer acquisition and customer retention is also
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