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An LTV model and customer segmentation based on customer value: a case study on the wireless telecommunication industry

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Abstract

Since the early 1980s, the concept of relationship management in marketing area has gained its importance. Acquiring and retaining the most profitable customers are serious concerns of a company to perform more targeted marketing campaigns. For effective customer relationship management, it is important to gather information on customer value. Many researches have been performed to calculate customer value based on Customer lifetime value (LTV). It, however, has some limitations. It is difficult to consider the defection of customers. Prediction models have focused mainly on expected future cash flow derived from customers' past profit contribution.

In this paper we suggest an LTV model considering past profit contribution, potential benefit, and defection probability of a customer. We also cover a framework for analyzing customer value and segmenting customers based on their value. Customer value is classified into three categories: current value, potential value, and customer loyalty. Customers are segmented according to three types of customer value. A case study on calculating customer value and segmenting customers of a wireless communication company will be illustrated.

Keywords: Lifetime value; Customer segmentation; Customer value; Data mining; Customer churn

1. Introduction

Customer relationship management (CRM) has become one of the leading business strategies in the new millennium. It is difficult to find out a totally approved definition of CRM. We, however, can describe it as 'Managerial efforts to manage business interactions with customers by combining business processes and technologies that seek to understand a company's customers' (Kim, Suh, & Hwang, 2003), i.e. structuring and managing the relationships with customers. CRM covers all the processes related to customer acquisition, customer cultivation, and customer retention. Even though we put aside the existing studies, which assert that it costs more to acquire new customers than to retain the existing customers, we can imagine that customer cultivation and retention are more important than customer acquisition because lack of information on new customers makes it difficult to select target customers and this will cause inefficient marketing efforts.

Therefore, in customer cultivation and retention, 'How big profits a certain customer can contribute to a company' is an important issue. Moreover, precise evaluation of customer value and targeted customer segmentation must be critical parts for the success of CRM especially for the industries like wireless communication industry, which are in the middle of stiff competitions and rapid customer churn.

Generally, three core works are necessary for the increase of customer value: up-selling, cross-selling, and customer retention (Kim, 2000). Up-selling is selling the same kinds of products that a customer has already bought and cross-selling is selling what a customer have never bought, i.e. new kinds of products for the customer. Customer retention means the effort to keep our customers being stayed as ours, prohibiting them from changing their minds. It is reasonable to consider these three sides when we consider customer value, accordingly. The scope of CRM activities is shown in Fig. 1.

Understanding the value of customers and the most profitable customers are essential to retain customers (Hawkes, 2000).

This paper aims at suggesting a new lifetime value (LTV) model and customer segmentation considering customer defection and cross-selling opportunity. We will also

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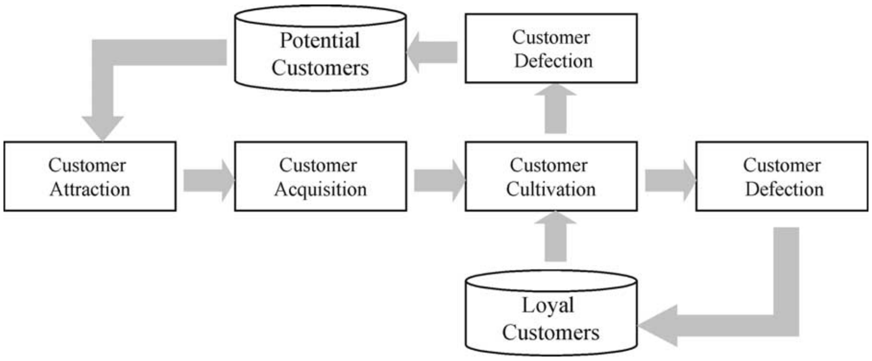

Fig. 1. The scope of CRM.

propose brief marketing strategies after segmenting customer base. This paper is organized as follows. Section 2 reviews the previous studies related to customer value. This part illustrates the limitations of existing studies and prepares the background reasons of this paper. Section 3 proposes a calculation model for measuring customer value applicable to a wireless telecommunication company. We apply real data of a wireless company to the model in Section 4. In Section 5, we perform customer segmentation with the result of customer value derived in Section 4 and proposes brief marketing strategies based upon the result of customer segmentation. Finally, Section 6 concludes this paper with the remark on the weaknesses of this study and future research directions.

2. Related works

2.1. The definition of LTV

Customer value has been studied under the name of LTV, Customer Lifetime Value, Customer Equity, and Customer Profitability. The previous researches contain several definitions of LTV. The differences between the definitions are small. Table 1 shows the definitions of LTV.

Considering the definitions above, we define LTV as the sum of the revenues gained from company's customers over the lifetime of transactions after the deduction of the total cost of attracting, selling, and servicing customers, taking into account the time value of money. The building block of LTV over time frame is shown in Fig. 2.

The horizontal axis denotes the type of relationship over time frame while vertical, type of customer value toward a company. A company forms various relationships according to the relationship stages—rudiment, beginning, fosterage, and expiry stage. A customer also gives a company various revenues, costs, and opportunities and potential benefits.

2.2. Models of LTV calculation

There are a lot of researches on calculating customer value. The basic concept of these researches, however, focused on Net Present Value (NPV) obtained from customers over the lifetime of transactions (Bayón, Gutsche, & Bauer, 2002; Berger & Nasr, 1998; Gupta & Lehmann, 2003; Roberts & Berger, 1989). Dwyer (1997) tried to calculate LTV through modeling the retention and migration behavior of customers. Focused on making decision of marketing invest, Hansotia and Rukstales (2002) suggested incremental value modeling using tree and regression based approach. Hoekstra and Huizingh (1999) also suggested a conceptual LTV model and categorized input data of the model into two types, source of interaction data and time frame. Most LTV models stem from the basic equation, although we have many other LTV calculation models having various realistic problems. The basic model form based upon the proposed definition is as

Table 1
Definitions of LTV

Definition	Article
The present value of all future profits generated from a customer	Gupta and Lehmann (2003)
The net profit or loss to the firm from a customer over the entire life of transactions of that customer with the firm	Berger and Nasr (1998)
Expected profits from customers, exclusive of costs related to customer management	Blattberg and Deighton (1996)
The total discounted net profit that a customer generates during her life on the house list	Bitran and Mondschein (1996)
The net present value of the stream of contributions to profit that result from customer transactions and contacts with the company	Pearson (1996)
The net present value of a future stream of contributions to overheads and profit expected from the customer	Jackson (1994)
The net present value of all future contributions to overhead and profit	Roberts and Berger (1989)
The net present value of all future contributions to profit and overhead expected from the customer	Courtheoux (1995)