

# A Model to Determine Customer Lifetime Value in a Retail Banking Context

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During the past decade, the retail banking industry started to face a set of radically new challenges that had an overall negative impact on industry margin and profitability. In response to these challenges, more and more retail banks have focused on increasing the scale of their operations, which has led to a rising importance of mergers and acquisitions (M&A). From a Marketing perspective, M&A transactions are nothing other than the acquisition of the customer base of one company by another one, usually based on the assumption that the acquiring bank can manage this customer base more profitably than the selling bank was able to. It is therefore not surprising that questions about the valuation of customers have become more important than ever in the retail banking industry.

Our article provides a contribution in this area by presenting a customer valuation model that we developed in cooperation with a leading German retail bank, which takes account of the specific requirements of this industry. Our model is based on a combination of first-order Markov chain modeling and CART (classification and regression tree) and can deal equally well with discrete one-time transactions as with continuous revenue streams. Furthermore, it is based on the analysis of homogeneous groups instead of individual customers and is easy to understand and parsimonious in nature. In our article we provide proof of the practical value of our approach by validating our model using 6.2 million datasets. This validation shows how our model can be applied in day-to-day business life.

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**Keywords:** Customer Relationship Management, Customer Lifetime Value, Retail Banking, Markov Chains, CART Analysis

## Introduction

During the past decade, the retail banking industry started to face a set of radically new challenges that had an overall negative impact on industry margins and profitability. For the major part, these challenges have been caused by advances in modern information and telecommunication technologies, which ultimately have resulted in higher cost transparency and brand switching behavior. The resulting increase in competitive intensity has led to a commoditization of basic banking products, such as deposit taking, mortgages and credit extensions. This has further been fueled by an ever rising number of new entrants in the retail banking sector coming from industries as diverse as insurance and automobile production. The acquisition of the German Allbank by General Electric to create the GE Money Bank in 2004 as well as the increasing number of cars sold in a credit vs. cash mode are omnipresent witnesses of this evolution.

In response to these challenges, more and more retail banks have focused on increasing the scale of their operations, which has led to a rising importance of mergers and acquisitions (M&A). Particularly in the European retail banking environment, which has historically always been more fragmented than, for

example, its North American counterpart, this trend is obvious. Prominent examples include the 1999 merger of BNP and Paribas in France, the acquisition of the German HypoVereinsbank by the Italian UniCredit Group in 2005 and the merger between Banca Intesa and Sanpaolo in 2006. There are at least four reasons that give room for the assumption that this trend towards increasing M&A in the European retail banking industry is likely to continue in the future. First, in many European countries retail banking is still very fragmented. For example in Italy, the five largest banks own less than half of the banking market. Second, the introduction of the Euro has led to further margin pressure due to an increase in cross-border competition among retail banks. This has resulted, among others, in a decreasing cost of borrowing and the loss of certain revenue streams such as commission fees on currency exchanges. Third, the Basel II framework, which sets new standards in risk management and capital adequacy, is associated with various changes in operations, the implementation of which create a significant cost burden that causes additional worry in this already tortured industry. Finally, mergers and acquisitions can be an appropriate strategy for banks to hedge macroeconomic risks, especially in Europe where loan portfolios are often severely home-biased.

From a Marketing perspective, M&A transactions are nothing other than the acquisition of the customer base of one company by another one, usually based on the assumption that the acquiring bank can manage this customer base more profitably than the selling bank was able to (Selden and Colvin, 2003). It is, therefore, not surprising that questions around the valuation of customers have become more important than ever in the retail banking industry. At the center of this interest lies the concept of customer lifetime value (CLV), which was defined more than 30 years ago by Kotler as “the present value of the future profit stream expected over a given time horizon of transacting with the customer” (Kotler, 1974, p. 24). The interest the Marketing discipline has recently been paying to CLV and the related subject of customer relationship management (CRM, e.g. Payne and Frow, 2005) has its roots in an evolution that started in the mid 1980 s. During that time, Dwyer *et al.* (1987) were among the first to highlight that Marketing, which has historically focused on the analysis of single transactions, should start paying attention to the relationship aspect of buyer–seller behavior. Only three years later, Reichheld and Sasser (1990) were able to show empirically that such a relationship-focus can lead to significant advantages since customers tend to generate higher profits the longer they stay with the company. Although Reinartz and Kumar showed that the relationship between lifetime and profitability may be more complex than Reichheld and Sasser assumed, especially in non-contractual relationships (Reinartz and Kumar, 2002; Reinartz and Kumar, 2000), it has nourished the idea that market-based assets, such as cus-

tomers relationships, can lead to superior market performance and shareholder value (Srivastava *et al.*, 1998; Srivastava *et al.*, 1999).

Central to the idea of CRM is the assumption that customers differ in their needs and the value they generate for the firm, and that the way customers are managed should reflect these differences. CRM is therefore not about offering every single customer the best possible service, but about treating customers differently depending on their CLV. Such appropriate treatment can have many faces, starting with offering loyalty programs to retain the most profitable customers (Shugan, 2005) through to the abandonment of unprofitable customer relationships (Haenlein *et al.*, 2006). Yet, selecting between these strategies requires that the company knows the value its different customers generate. Consequently many papers have been published dealing with customer valuation as well as conceptual and practical challenges associated with it (e.g. Berger and Nasr, 1998; Jain and Singh, 2002; Rust *et al.*, 2004). However, only a few of them (e.g. Berger *et al.*, 2003; Keane and Wang, 1995) are tailored to specific industries and, hence, take account of sector-specific challenges associated with the implementation of those approaches. This is rather surprising as it has long been highlighted that customers may differ substantially across industries and that such differences should translate to the models used to value them. For example Jackson (1985) stressed that customers can be grouped into different categories, depending on the level of commitment they show to a particular seller. On one end of the spectrum is the “always-a-share” model, which assumes that customers can easily switch part or all of their spending from one vendor to another. The opposite end of the behavior spectrum assumes that, due to high switching costs, the buyer is committed to only one vendor to satisfy his or her needs. Once the customer stops purchasing from this vendor and changes to another one s/he is “lost-for-good” and cannot return to the vendor easily. Although the category every customer can be allocated to depends to a certain extent on this specific customer’s preferences, it is also heavily influenced by the type of product sold and, hence, the industry. Building on this categorization, Dwyer (1989) showed that models used to value customers in these two settings differ substantially and proposed two approaches to determining CLV: a customer migration model and a customer retention model. It therefore makes intuitive sense that models to determine CLV should, at least to a certain extent, be adapted to specific industry characteristics.

Thinking about the retail banking environment, a model to determine CLV should satisfy at least three conditions: First, it needs to be able to handle discrete one-off transactions, which occur either only once in a lifetime or in very long purchasing cycles (e.g. mortgages), and continuous revenue streams (e.g. regular

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