On the Use of Discounted Cash Flow Method on the Customer Valuation

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Abstract - The Discounted Cash Flow Method has been widely argued as the best method to asset valuation. This article is about the valuation of customers. The use of historic customer profitability and the Discounted Cash Flow Method to customer valuation are discussed. Moreover, the components of customer lifetime value is presented and described.

1. Introduction

The 80s decade is characterized by the customer revolution, in which the main idea is the focus on customers rather than on products (Boyce, 2000). For a long time, the dominant philosophy was that "customer is always right" and thus managers focused in satisfying the customer needs and improving the customer satisfaction. This period is designed as "traditional marketing strategy" by Gupta and Lehmann (2005). According to these authors, a new paradigm has emerged, which they denominate "customer-base strategy". Whereas in the first paradigm the main concern is the value that a firm provides to a customer, the second paradigm emphasises the two sides of customer value, that is, the firm should invest to provide value to the customer and, in counterpart, the customer should provide returns to the firm and its shareholders (Bolton and Tarasi, 2006). As such, this is an evolution from the "customer is king" to the "customer is cash" (Boyce, 2000).

Nowadays researchers argue that customers should be viewed as assets of firms (*e.g.*, Blattberg *et al.*, 2001; Dhar and Glazer, 2003; Gupta and Lehmann, 2003, 2005). Moreover, some researchers argue that customers are intangible assets of firms (*e.g.*, Dhar and Glazer, 2003; Gupta and Lehmann, 2003) because customers are not owned by the firms. In fact, firms only have a relationship with them, and even this relationship might be not exclusive (Dhar and Glazer, 2003).

Considering customers as assets, some authors point out that it is crucial to calculate their financial value to the firm (*e.g.*, Boyce, 2000; Gupta and Lehmann, 2003; Jain and Singh, 2002; Malthouse and Blattberg, 2004). The idea of valuing customers arose some decades ago. Even though the customer valuation

has been subject to a great development (Bell *et al.*, 2002), it has not been widely applied, due to the necessity of enormous amount of data and sophisticated models (Gupta and Lehmann, 2003). Furthermore, being intangible assets, customers are difficult to evaluate with precision (Gupta and Lehmann, 2003).

2. The Customer Value

Customer valuation has been mainly based on the principles of contemporary finance of assets' valuation, more precisely the discounted cash flow method (DCF) method. The DCF method was proposed by Rappaport in 1986 and became popular in corporate valuation.

The customer value is usually called customer lifetime value (CLV). Other denominations have been used, such as customer profitability (Jain and Singh, 2002), economic worth of a customer (Berger and Nasr, 1998) and expected customer future value (Pfeifer and Farris, 2004).

Many customer value definitions and calculation formula were proposed in the literature. Nevertheless, the majority of proposals is based on one of the following formulas:

$$CLV = \sum_{t=1}^{T} \frac{revenues_t - \cos ts_t}{(1+i)^t}$$

and

$$CLV = \sum_{t=1}^{T} \frac{cash\ flow_t}{(1+i)^t}$$

Nowadays, customer lifetime value is the most popular customer measure because it is forward-looking, includes all the elements of customer profitability and it is an essential element of the customer-centric paradigm (Kumar and Shah, 2004). In fact, customer lifetime value has become a buzzword in the last decade (Nasr-Bechwati and Eshghi, 2005).

Customer lifetime value is a more powerful measure than historic customer profitability analysis, because customer lifetime value looks at the future potential of the customer, whereas current and past

profitability is not forward-looking (Boyce, 2000; Jain and Singh, 2002). Customer profitability is the difference between revenues and costs associated with the customer during a specific period of time (Boyce, 2000) and this measure is calculated on a single period basis, usually the last economic year (Ryals, 2006). In this way, unlike customer lifetime value, customer profitability is not a good basis for developing marketing strategies (Ryals, 2002).

The process of customer lifetime value calculation should take into consideration the cash flow patterns (Nasr-Bechwati and Eshghi, 2005), the relationship birth, purchase activity, and the defection (Reinartz and Kumar, 2000). Therefore, the exact customer lifetime value calculation is contingent on several factors and firms should identify the model that best fit their situation (Kumar et al., 2006).

Customer lifetime value has been widely studied and, as a result, a huge number of models are available in the literature. The sophistication of the models varies a lot, since simple models to more complex ones, which aim to incorporate the complexities of the real business situations. Several researchers have intended to evaluate the customers, estimating their lifetime value, but the majority of them only proposed formulas to evaluate the customer value (e.g., Berger and Nasr, 1998; Gurau and Ranchhold, 2002; Pfeifer and Farris, 2004). Most of researchers neither present methods to forecast the customer lifetime value components nor indicate the necessary data.

3.   The Components of Customer Value

As presented above, the mathematic formulation of CLV is based on the discounted cash flow method, which was imported from the finance theory. From an analysis of the CLV formulas proposed in the literature, it can be concluded that the most common components are: (i) cash flow, (ii) retention rate, and (iii) discount rate. An analysis of each of these components is presented below.

Some researchers argue that customer lifetime value is based on the difference between customer revenues and customer costs (e.g., Calciu and Salerno, 2002; Gurau and Ranchhod, 2002; Mulhern, 1999), while other propose the contribution margin [1] (e.g., Berger and Nasr, 1998; Malthouse and Blattberg, 2004; Reinartz and Kumar, 2000). Nevertheless, according to the financial theory, the value of any asset is the present value of its cash flows (cash inflows minus cash outflows) over time. Few researchers have accurately applied the cash flow concept on customer lifetime value.

The concept of cash flow is quite different from those of revenues and costs, and it is very important to

have in mind their differences. Revenues are economic resources earned during a time period; they occur when the product or service is provided. In some cases, the product or service is provided but the firm has yet to receive cash; so, cash inflow occurs later than revenues. On the other hand, costs are economic resources used up in a time period and they occur at the moment of resources' consumption. In many cases, costs are paid in a time period different from their consumption, i.e., the time period of costs is different from that of cash outflow.

The allocation of specific cash flows to the customer relationship is a very difficult task (Gupta et al., 2006; Pfeifer et al., 2005; Ryals, 2006), because the product-based accounting prevails on a great number of firms and the cost allocation to customers is sometimes subjective. Boyce (2000), Gupta and Lehmann (2005), and Stahl et al. (2003) emphasise that a customer-based accounting is fundamental to an appropriate customer-oriented management. Ryals (2002) mentions that current technology can help the record of the customer-specific costs. Wiesel et al. (2008) propose a customer equity reporting approach, which consists of a "customer equity statement" and a "customer equity flow statement". They developed a specific model for an e-business firm.

The following Table presents the components of cash flow as stated by corporate finance.

Table 1 – Components of cash flow

A. Cash Inflow Operating cash flow Residual value of working capital Residual value of Capital Expenditures (CAPEX) **B. Cash Outflow** Net change in working capital CAPEX **C. Cash Flow [A-B]**

Operating cash flow is the difference between operating inflows and operating cash outflows. It can also be computed as shown on Table 2.

Table 2 – Components of operating cash flow

EBITDA[2] - Depreciation and Amortization = EBIT[3] - Taxes = EBIAT[4] + ~~Depreciation and Amortization~~

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[1] According to the accounting theory, the contribution margin is the difference between revenues and variable costs.

[2] EBITDA – Earnings before interests, taxes, depreciation and amortization

[3] EBIT – Earnings before interests and taxes

[4] EBIAT – Earnings before interests after taxes

= Operating Cash Flow

Nevertheless, past research has given emphasis only on customer revenues and costs and the others components of cash flows have been neglected.

Some researchers argue that one of the most important components of customer value is the retention probability of the customer at each period, which should influence the customer cash flows. The retention probability is the probability of the customer continues to do business with the firm. This probability has been widely designated in the literature by retention rate, which complement is the defection rate or customer attrition.

The discount rate is the rate used to transform expected future cash flows into a present value. The discount rate has to reflect the riskiness of the cash flows (Damodaran, 2002). It means that the evaluation of any asset (including customers) has to comprise both its return and risk. If customer risk is ignored, when a firm compares their customers based on their value, only returns are taken into account, and, consequently, firms are likely to take incorrect decisions, which may result on a huge customer portfolio risk.

4. The Most Common Assumptions in The Customer Lifetime Value Computation

It is usual to find customer lifetime value estimates based on assumptions that are misadjusted to the business reality as well as to the financial theory of assets evaluation. Some of these assumptions are: constant margin over time and across customers, constant retention rate across customers and over time, constant acquisition cost per customer, and constant number of customers over time.

5. Customer Lifetime Value Applications

Customer lifetime value models can be applied in several types of decision making, from operational and strategic marketing decisions to strategic decisions of the firm. Some of the most cited customer lifetime value applications in the literature are:

- Customer segmentation;
- Ranking the customers;
- Identification and distinction of the more profitable customers from the less profitable ones;
- Customer selection in acquisition and retention process;
- Marketing resource allocation across customers;
- Marketing resource allocation between customer acquisition and customer retention;
- Different decisions about customer acquisition and customer retention;
- Determination of the type and degree of relationship the firm wants to develop with its customers;
- Targeting and managing unprofitable customers;
- Design of marketing programs;
- Guidance for marketing investments and consequently, to maximise the return on marketing investments;
- Choosing the medias for communicating with customers and the frequency of communication;
- Analysis of the effects of different actions of the firm;
- Customer base valuation;
- Management of the existing customer base;
- Development of marketing strategies to maximise shareholder value;
- Firm valuation;
- Customer strategic planning;
- Decisions about mergers and acquisitions.

6. Conclusions

Even though the majority of proposed formulas for customer lifetime value computation is deterministic and, in our opinion, characterized by a more simplistic point of view than the generality of firm/customer relationship situations, the customer lifetime value concept has been applied in some different situations. Furthermore, customer lifetime value modulation has been widely criticised in the literature, mainly due to the incapacity of encompass all the variables that affect customer behaviour. As such, we argue that the development of stochastic models to compute the customer lifetime value is an imperative, and the unobserved heterogeneity need to be tested.

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