Estimating cellphone providers' customer equity ☆

Cleusa Satico Yamamoto Sublaban [a,*], Francisco Aranha [b]

[a] *Universidade Metodista de Piracicaba, Mestrado Profissional em Administração, Rodovia do Açucar, Km 156, Piracicaba, SP, 13400-911, Brazil*
[b] *EAESP/Fundação Getulio Vargas, Av. Nove de Julho, 2029, São Paulo, SP, 01313-902, Brazil*

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ABSTRACT

This paper provides insights about how customer equity estimates can help businesses monitor the competition as well as aid managers in making their marketing investment decisions, and how companies can employ their marketing investments to maximize current and future yield/returns. The article concerns itself with the current offer of cellphone providers and their main products. The research includes survey data through interviews with 302 cellphone users of Sao Paulo, Brazil. The study uses this data combined with a number of economic assumptions and a financial marketing model to create an insight in customer equity values of cellphone providers in the region. The scenario dated October 2005 is that the estimated customer equity of the service provider Vivo is, respectively, 93 and 91% larger than those of competing providers Claro and TIM. The research underlines that on average the customer equity flowing from the post-paid segment is 3.5 times larger than that of the pre-paid. In addition to these results the study provides the customer lifetime value (CLV) estimates for Claro's, TIM's and Vivo's pre- and post-paid customers and analyzes the retention and loss figures of CLV. Also a discussion follows of the implications that these values will likely have for the companies' marketing strategy.

1. Introduction

Both scholars and practitioners accept the fact that managers need performance measures to determine if they are achieving or in the process of achieving the organizational goals (Kaplan and Norton, 1997). The underlying assumption here is that what managers cannot measure they cannot control (e.g. without adequate metrics the company cannot evaluate the effectiveness of an action with respect to organizational objectives). The lack of appropriate metrics is often the case in the area of marketing management, as the impact of initiatives is usually spread out over long-term profit margins and accumulates through increases in the value of intangible assets (Rust et al., 2004a; Srivastava et al., 1998). As a result of this fact, many companies give less importance to marketing actions than to other business areas simply because the impact of the latter is easier to quantify.

This paper builds on three main components: the theoretical model of customer equity as proposed by Rust et al. (2004c), a number of economic assumptions, combined with the last component, survey data, in order to generate estimates of customer equity value(s) for three mobile phone operators in the State of São Paulo, Brazil. These estimates can serve as input for managerial investment decisions,

with a particular emphasis on decisions related to the allocation of available company resources among areas of brand, value and relationship (actions). The high penetration of mobile phones in even some of the most desolate areas, combined with a tendency of providers to obfuscate their term and contract structure through a multitude of products, creates ample opportunity to specifically test the consumer' perception of components such as brand strength, perceived value and the relationship(s) that he/she has with the brand. The study measures these components among three major service providers for both their pre- and post-paid product lines. The structure of the article consists of the following: first, the paper discusses the conceptual model behind the empirical study; then presents the data and describes the methods in the analysis and, in the end, explores the results and their implications to the practitioners.

2. Conceptual framework

Three central drivers, or indicators, direct marketing investments: (1) value equity, (2) brand equity, and (3) relationship equity. Value equity represents the objective evaluation of the benefits that customers experience and/or acquire from a particular company and its corresponding products and services. Brand equity, on the other hand, represents the customer's subjective assessment of a particular firm's benefits, and its accompanying products and services. Furthermore, relationship equity represents the customer's view of the strength of the relationship between her and a particular company or firm (Rust et al., 2004b).

According to the model of Rust et al. (2004c), a particular marketing investment – for example, a campaign to strengthen customer relationships – results in the upgrading of the corresponding driver (relationship equity), which, in turn, leads to an improved perception in the eye of its customers. In other words, if the firm invests in a relationship campaign, customers acquire and retain a more positive perception of the firm, and in turn wish to continue being customers and reward the firm with more or continuing purchases. Additionally, improvement of the driver can also lead to attraction of new customers. Attraction and retention of one client lead to gains in his Customer Lifetime Value (CLV), which means the estimated monetary value that this client will bring to the firm during the entire lifespan of his/her commercial relationship with the company, discounted to today's value. The summation of the CLV of all existing clients in the portfolio of the firm combined with that of the clients that the company intends to acquire, is the Customer Equity (CE). In other words, customer equity is the *potential* value of a company's entire client portfolio.

This customer equity is dynamic and changes over time in accordance with the competition level, the decrease in customer income, and other factors. Marketing investments also modify the customer equity since they trigger the aforementioned drivers (value, brand and relationship equity) which in turn influence the customers' decision-making processes, resulting in the customer staying with their existing supplier/service provider or switching to a competitor. Naturally, all investments have costs and as such manager needs the measurement of their returns in order to help determine the best performing one or ones. To do so one must compare the growth of customer equity versus the necessary expenditures to facilitate the necessary campaign(s). Only if the customer equity gain is larger than its implementation costs, does the investment become a worthwhile endeavor. While implementing this model, one must assume that, at any given moment, a (potential) customer has the possibility to buy from each and every firm supplying goods or services in a non-monopolistic sector. The specific probabilities of these possible choices may change over time. When one company improves one or more relevant marketing drivers, that company simultaneously improves the probability of purchase from a customer, while at the same time reducing the chance(s) of this customer buying products from competitors. Besides marketing drivers, another influencing factor on the probability of purchase is consumer inertia, which is the tendency of consumers to continue purchasing services or products from the same supplier that he or she is used to doing business with. The study assumes that a consumer most likely acquires a product from a certain brand when his/her total utility of this brand is superior to the total utility of competing brands.

The following equation summarizes these propositions by stating the total customer utility that is derivable from a specific brand (Eq. (1)).

$$\text{Utility} = \text{Inertia} + \text{Impact of drivers} \tag{1}$$

where:

- Utility is the benefit for a customer derived from a specific brand;
- Inertia is the benefit derived from the knowledge of the previously purchased brand and from the convenience of keeping with it;
- Impact of drivers is the benefit supplied by the brand, value and relationship investments of the firm.

Considering a linear and additive relation among these values, the relation above transforms itself into the following algebraic equation:

$$U_{ijk} = \beta_{0k} \quad \text{LAST}_{ijk} + x_{ik}\beta_{1k} + \varepsilon_{ijk} \tag{2}$$

where:

- U_{ijk} = Utility of brand k to the individual i, who most recently purchased brand j;
- β_{0k} = Logit regression coefficient corresponding to inertia;

- $\text{LAST}_{ijk} = 1$ if the customer purchased brand j in his last transaction; or 0 if he did not;
- x_{ik} = Vector of drivers;
- β_{1k} = Column vector of logit regression coefficients corresponding to the drivers;
- ε_{ijk} = Random error term.

The experienced utility leads to the purchase probability by the customer, as represented in Eq. (3).

$$P_{ijk} = \left(U_{ijk}\right) / \Sigma_k\left(U_{ijk}\right) \tag{3}$$

where:

- P_{ijk} = Probability that the individual i will choose brand k, given that brand j was most recently chosen;
- U_{ijk} = Utility of brand k to the individual i, who most recently purchased brand j.

For each customer, a transition matrix M_i^{t-1} aggregates his or her purchase probabilities, of all the evaluated brands, in all possible scenarios of relationship with each brand. The matrix M_i^{t-1} of customer i has dimension $J \times J$, where J is the number of brands. Each element of the matrix registers the probability of change p_{ijk}, indicating the likelihood that the customer i will choose brand k in the next purchase, conditional to having purchased brand j most recently. This matrix is a Markov transition matrix. To calculate the probabilities in the successive times of purchase, the study raises this matrix to the power of $t-1$, where t is time.

A line vector $\mathbf{A_i}$, with dimension $1 \times J$, contains the purchase probabilities for the next transaction of customer i. So the procedure to calculate the brand choice probabilities in the next purchases follows according to Eq. (4):

$$B_{it} = \mathbf{A_i} \cdot M_i^{t-1} \tag{4}$$

where:

- $\mathbf{A_i}$ = Vector with probabilities of purchase for the next transaction ($t=1$) of customer i;
- B_{it} = Brand purchase probabilities of client i at time t;
- M_i^{t-1} = Markov transition matrix.

After calculating the probabilities for a customer over time, the study finds the CLV as described in Eq. (5), based on the following additional customer and economic variables: purchase frequency, purchase volume, discount rate (or capital cost) and contribution margin.

$$\text{CLV}_{ij} = \Sigma_t\left(1 + d_j\right)^{-t/fi} \quad v_{it} \cdot \pi_{it} \cdot b_{ijt} \tag{5}$$

where:

- CLV_{ij} = Customer lifetime value of the customer i for brand j;
- d_j = Discount rate for producer of brand j;
- f_i = Purchase frequency of customer i;
- v_{it} = Purchase volume at time t, of customer i;
- π_{jt} = Contribution margin at time t, of customer i;
- b_{ijt} = Probability of customer i purchasing brand j at time t.

Finally, to calculate customer equity for brand j, the study multiplies the average of sample CLVs by the population size (total number of customers in the market for all brands), as shown in Eq. (6).

$$\text{CE}_j = \text{average}_i \text{CLV}_{ij}.\text{pop}, \tag{6}$$

where:

- CE_j = Customer equity of the firm j (i.e. summation of the CLVs of existing and potential customers);