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## ZIBS Technical Report

### CUSTOMER EQUITY: AN INTEGRAL PART OF FINANCIAL REPORTING?

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*“Brand-Driven Business Performance”*

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# CUSTOMER EQUITY: AN INTEGRAL PART OF FINANCIAL REPORTING?

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## **Abstract**

The objective of financial reporting is to provide information to help current and potential investors, creditors and other users in assessing the amounts, timing, and uncertainty of prospective cash receipts. But financial statements are not, on their own, sufficient to meet the objectives of financial reporting and additional information has to be provided to external addresses of financial reports. For firms which aim to increase the value of the customer base (Customer Equity), such additional information could be about the value of their customer base and its changes over time. Consequently, a performance measurement approach, which is in line with the criteria of financial reporting and focuses on the value of the customer base, is needed. This paper proposes such a performance measurement approach. Furthermore, we demonstrate the applicability of this approach by applying it to the customer base of Netflix.com. This approach provides relevant performance metrics for monitoring customer management activities (on a strategic level), reduces information asymmetries, assists communicating customer value orientation, and enables external addressees to monitor firm performance.

## **Keywords:**

customer equity; decomposition; performance measurement approach

## Table of Content

<b>1 Introduction .....</b>	<b>1</b>
<b>2 Critical Criteria for Financial Reporting.....</b>	<b>4</b>
<b>3 Model .....</b>	<b>7</b>
3.1 General Formulation.....	7
3.2 Specific Model Formulation .....	15
<b>4 Illustrative Application .....</b>	<b>17</b>
4.1 Data.....	17
4.2 Customer Equity Statement .....	19
4.3 Customer Equity Flow Statement.....	20
4.4 Additional Long-Term Customer Performance Measures.....	21
<b>5 Conclusions, Limitations, and Future Research.....</b>	<b>23</b>
<b>6 Figures and Tables .....</b>	<b>26</b>
<b>7 References .....</b>	<b>38</b>

# 1 Introduction

The objective of financial reporting is to provide information to help current and potential investors, creditors and other users in assessing the amounts, timing, and uncertainty of prospective cash receipts (Financial Accounting Standards Board 1978; International Accounting Standards Board 2004). The IASB Framework for the Preparation and Presentation of Financial Statements acknowledges that financial statements are not, on their own, sufficient to meet the objective of financial reporting (International Accounting Standards Board 2004). To bridge the gap between what financial statements are able to achieve and the objective of financial reporting, additional information such as explaining the main trends and factors underlying the development, performance and position of the entity's business is needed (International Accounting Standards Board 2005).

The Management Discussion and Analysis required in the United States (Securities and Exchange Commission 2003) and the recent discussion about Management Commentary (International Accounting Standards Board 2005) aim to bridge this gap. They ask for information which supplements and complements information in the firm's financial statement, has an orientation to the future, provides an analysis through the eye of management, and should be understandable, relevant, reliable, and comparable (International Accounting Standards Board 2005). Examples are information about the nature of the business, key resources, risks and relationships, and performance measures and indicators. For instance, Netflix.com provides information about customer churn, subscribers acquisition cost, and gross margin in their quarterly statements. These key business metrics are periodically reviewed by management to evaluate the effectiveness of their operational strategies (Netflix 2005).

For many firms, customers are the primary asset (e.g., Hogan et al. 2002, Gupta and Lehmann 2003, Rust et al. 2004a). Customer management has emerged as the practice which aims to implement and to profit from a customer orientation philosophy. In recent years, the marketing literature has developed and discussed the concept of customer lifetime value, which

is the present value of all future cash flows generated from a customer (e.g., Berger and Nasr 1998, Dwyer 1997, Jain and Singh 2002, Gupta and Lehmann 2003, Lewis 2005) and Customer Equity, which is the sum of customer lifetime value across customers (e.g., Blattberg and Deighton 1996; Gupta et al. 2004; Rust et al. 2004b; Wiesel and Skiera 2005). Customer management deals with the acquisition and retention of customers with the aim to increase the customer lifetime value and Customer Equity (e.g., Reinartz and Kumar 2000, Reinartz and Kumar 2003, Venkatesan and Kumar 2004, Reinartz et al. 2005, Payne and Frow 2005, Ryals 2005). Consequently, if a firm aims to manage the firm's customer assets and to increase the value of the customer base (Customer Equity), information about those activities should be part of the supplement and complement information of a firm's financial reporting.

Hence, a performance measurement approach, which is in line with criteria of financial reporting and focuses on the value of the customer base instead of only short-term metrics, is needed. On a strategic level, this approach should provide internal addresses with relevant long-term performance metrics about the health of the firm's customer relationships. Furthermore, this information should be handed over to external addressees to reduce information asymmetries, communicate customer value orientation, and assist to meet the objective of financial reporting. If information is important to management in managing the business, it is also important to investors in assessing performance and future prospects (PricewaterhouseCoopers 2005).

A possible approach requires (i) to monitor the Customer Equity over time (Customer Equity Statement) and (ii) to decompose changes in Customer Equity over time (Customer Equity Flow Statement). Decomposing the changes in Customer Equity into the effects of the variation in customer metrics (such as number of customers, customer lifetime, customer cash flow, and acquisition as well as retention expenditures) allows managers and investors to get information about how much and due to which sources the value of the customer base has changed. This, in conjunction with additional long-term customer performance measures, could

help to derive more detailed implications regarding the firm's customer management activities than just monitoring the Customer Equity over time. For instance, if a decrease in Customer Equity is due to a decrease in customer lifetime, managers should focus on retention activities. In contrast, if the decrease is a result of a change in customer cash flow, managers should focus on cross-selling, up-selling, or pricing.

Hence, the objectives of this paper are (i) to deduct a catalogue of criteria relevant for financial reporting, (ii) to propose a performance measurement approach which is in line with the financial reporting criteria and focuses on the value of a firm's customer base (Customer Equity), (iii) to decompose changes in Customer Equity over time into the effects of the variation in customer metrics, (iv) to develop additional long-term customer performance measures which assist to derive implications regarding the firm's customer management activities, (v) to illustrate that it is more appropriate to look at the effects of changes of the long-term value of the customer base as well as those additional long-term customer performance measures than looking at short-term customer metrics, and (vi) to demonstrate the applicability and usefulness of the approach by applying it to public available data of Netflix.com. This approach provides relevant performance metrics for monitoring customer management activities (on a strategic level), reduces information asymmetries, assists communicating customer value orientation, and enables external addressees to monitor firm performance.

We contribute to the existing research by deducing a catalogue of criteria relevant for financial reporting. Furthermore, we develop a general and specific model that meets these criteria and could be used as a performance measurement approach for internal as well as external purposes. The main purpose of this approach is to visualize managers (i) the development of their customer base value, (ii) the existence of possible negative evolutions, and (iii) the sources of changes in Customer Equity. As such, it illustrates to the management that a decrease in Customer Equity over time could be, for example, due to a decrease in

customer retention. Nevertheless, it does not provide the reasoning of the decrease in customer retention, which might be due to, for example, a decrease in customer satisfaction or superior offers from competitors. Identifying the reasons of change in customer metrics has to be done on a more operational level (e.g., which products to sell to which customers) and is not in the scope of this strategic approach.

The remainder of this paper is organized as follows: The following section deduces a catalogue of criteria relevant for financial reporting. After that we describe our model. Thereby, we present a general as well as specific formulation. Subsequently, we apply our proposed approach to illustrate its usefulness. The paper concludes with implications, limitations, and discussion of further research.

**2 Critical Criteria for Financial Reporting**

The FASB presents qualitative characteristics of financial reporting in its Statements of Financial Accounting Concepts No. 2 (Financial Accounting Standards Board 1980). These characteristics are consistent with the IASB Framework for the Preparation and Presentation of Financial Statements (International Accounting Standards Board 2004) and the criteria described in the Management Commentary discussion paper (International Accounting Standards Board 2005). These characteristics appear in the first column of Table 1.

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----- Insert Table 1-----  
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Information is considered relevant if it makes a difference in the decision making of the recipients of financial reports (e.g., managers, analysts, investors, and regulators) by helping them to form predictions or verify prior expectations. Nagar and Rajan 2005 show empirically that a set of customer relationship measures improve the explanatory power for next year’s earnings by 10% to 15% and Fornell et al. 2006 show that investments based on customer satisfaction produce sizable excess returns with lower systematic risk. According to these

studies as well as Gupta et al. 2004 and Wiesel and Skiera 2005, financial analysts have yet to give more than scant attention to off-balance-sheet assets, even though these assets may be key determinants of a firm's market value. If a firm were to include information about the health of its customer relationships, investors would have a better understanding of the link between the firm's assets and its capacity to generate shareholder wealth. The IASB discussion paper explicitly mentions customer-focused measures as key measures and indicators that, for instance, retail banks should use to assess operating performance and, hence, should report to external addresses (International Accounting Standards Board 2005, p. 44). A measure of the health of the firm's customer relationships should take future cash flows into account. In this context, the FASB recently emphasized the importance of discounted cash flow techniques for accounting measures (Financial Accounting Standards Board 2000). Hence, customer lifetime value and Customer Equity are ideal measures because of their future orientation. As we mentioned before, decomposing the changes in Customer Equity explains the derivation of Customer Equity with respect to customer metrics (e.g., customer retention or customer cash flow) through several effects, which isolate the effect of one metric from the effects of other metrics. Such analyses can provide valuable feedback information about what went wrong in the past and can be improved in the future. For example, in a mature market, a firm acquires many new customers with positive customer cash flows. Customer Equity from acquisition increases due the increase in number of customers. Nevertheless, a detailed analysis might demonstrate that the average customer cash flow decreases over time because the firm acquires less valuable customers and, hence, weakens their customer portfolio structure.

Reliability means that measures should be free from material error, faithfully represents that which it either purports to represent or could reasonably be expected to represent, and is free from bias. The Management Commentary discussion paper addresses "free from material error" and "represents faithfully" under the criteria supportability. Thereby, measures are supportable if it faithfully represents, for example, the source of information, inherent

uncertainty, and material assumptions, to allow addressees to assess the reliability of the measures presented for themselves. A prerequisite is the objectivity in data collection and processing so that different people computing the measure would obtain the same value. “Free from bias” is addressed in the criteria balance. It means that measures should be dealing even-handedly with good and bad aspects of the performance and prospects of the entity. As a result of the preceding discussion, we emphasize three critical criteria for a performance measurement approach with focuses on Customer Equity to establish relevance and reliability: *future-orientation, decomposition, and objectivity*.

Comparability is a further important quality of financial reporting information. Comparability implies that the measure is consistently applicable across industries and time so that managers and investors can truly compare the results for different firms over several years. The Management Commentary discussion paper refers only to comparable over time because comparability between entities conflicts with the objective of requiring management to convey what it believes is important. Nevertheless, a performance measurement approach focussing on Customer Equity could also be applied and compared between entities if it is standardized and does not depend on specific types of data. Because this also refers to the criteria of simplicity (see understandability), we underline comparability over time and entities.

Furthermore, the measures should be readily understandable by users and cost-effective. Many measures suggested in the academic literature require a knowledge most addresses do not have. Simple models rely only on a few inputs that reduce in addition the number of potential error sources. Cost-effectiveness is easier to achieve if secondary information can be used that are ideally collected within the firm anyway. Any necessary primary data collection should be reduced to a minimum. Critical criteria that derive from the aforementioned issues are *comparability, simplicity, and cost-effectiveness*.

A review of accounting journals reveals that there is research which advocates nonfinancial measures of company performance, such as customer satisfaction and loyalty, as

useful indicators of aspects of firm performance (e.g., Said et al. 2003, Smith and Wright 2004). Nevertheless, there is no research which suggests a performance measurement approach which is in line with the criteria in Table 1 and focuses on the value of the customer base. Subsequently, we propose such a general approach as well as one possible way to specify the general approach. Possibly, existing Customer Equity models (such as the one by Gupta et al. 2004 and Rust et al. 2004b) could be further extended to be consistent with financial reporting criteria which, nevertheless, is not in there focus.

### 3 Model

#### 3.1 General Formulation

Figure 1 shows the potential sources for changes in Customer Equity over time:



For the purpose of this paper, we define Customer Equity as the sum of the discounted customer lifetime values of all firm’s current customers in period t (Blattberg and Deighton 1996). Customer lifetime values are determined by the cash flows generated by the customers (customer cash flow) over her entire relationship with the company (lifetime) discounted by an appropriate discount rate. To retain or acquire customers, a firm has to invest money (retention and acquisition expenditures). Summing up the customer lifetime values over the number of current customers leads to the Customer Equity in period t.

$$(1) \quad CE_t = f_t(N_t, C_t, L_t, k_t) - h_t(N_t, L_t, CR_t, k_t) - g_t(N_t^N, CA_t, k_t) \quad (t \in T)$$

where

$$\begin{aligned}
CE_t &= \text{Customer Equity in period } t, \\
C_t &= \text{Customer cash flow of customers in period } t, \\
CA_t &= \text{Individual acquisition expenditures of customers in period } t \\
CR_t &= \text{Individual retention expenditures of customers in period } t, \\
f_t(\cdot) &= \text{Function of Customer Equity before marketing expenditures,} \\
h_t(\cdot) &= \text{Function of retention expenditures,} \\
g_t(\cdot) &= \text{Function of acquisition expenditures,} \\
k_t &= \text{Discount rate in period } t, \\
L_t &= \text{Expected lifetime of customers in period } t, \\
N_t &= \text{Number of customers end of period } t, \\
N_t^N &= \text{Number of new customers during period } t.
\end{aligned}$$

Thereby, the first term represents the Customer Equity in period  $t$  not considering any marketing expenditures. The second and third term represent the retention and the acquisition expenditures, respectively.

The difference between the Customer Equity in period  $t$  and  $t-1$  determine the change in Customer Equity for two subsequent periods:

$$\begin{aligned}
(2) \quad \Delta CE_{t,t-1} &= CE_t - CE_{t-1} \\
&= f_t(N_t, C_t, L_t) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\
&\quad - h_t(N_t, L_t, CR_t) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \\
&\quad - g_t(N_t^N, CA_t) + g_{t-1}(N_{t-1}^N, CA_{t-1}) \quad (t \in T \setminus 1)
\end{aligned}$$

Equation (2) represents the total effect of changes in Customer Equity between two subsequent periods. Note that we calculate changes in Customer Equity that occur in one period, but that our approach could be easily extended to calculate changes in Customer equity that occur over several periods. The information about the Customer Equity in period  $t$  and  $t-1$  as well as the total change in Customer Equity for two subsequent periods determine the “Customer Equity Statement”. “The Customer Equity Statement” therefore provides

information on the development of the customer base and, hence, about how much the value of the customer base has changed.

Yet, no insights can be gained regarding the sources why the Customer Equity changes over time. Therefore, the “Customer Equity Flow Statement” decomposes the changes in Customer Equity over time into direct and interaction effects. Direct effects occur because of individual variation of one metric while other metrics do not change (e.g., increase in Customer Equity only due to higher retention rates). In comparison, interaction effects occur because of simultaneous variations of two or more metrics (e.g., increase in Customer Equity due to simultaneous increase of customer retention and customer cash flow). The interaction effects can be determined by subtracting the direct effect from the total effect.

To decompose the changes in Customer Equity over time (Equation (2)), we consider changes in (i) number of customer, (ii) customer cash flows, (iii) expected customer lifetime, (iv) customer retention expenditures, (v) number of new customers, (vi) customer acquisition expenditures:

*Changes in the number of customers.* The first direct effect is due to changes in the number of customers over time. This effect is ambiguous: on the one side, the value increases because more customers generate more cash flow over their lifetime ( $\Delta N^f$ ) and on the other side, the value decreases because the firm has to spend more money to retain all those customers ( $\Delta N^h$ ).

$$(3) \quad \Delta N = \Delta N^f - \Delta N^h = \begin{aligned} & f_t(N_t, C_{t-1}, L_{t-1}) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\ & - h_t(N_t, L_{t-1}, CR_{t-1}) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \end{aligned} \quad (t \in T \setminus 1)$$

*Changes in customer cash flow.* The direct effect due to changes in customer cash flow over time equals:

$$(4) \quad \Delta C = f_t(N_{t-1}, C_t, L_{t-1}) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \quad (t \in T \setminus 1)$$

*Changes in expected customer lifetime.* The direct effect due to changes in the expected lifetime of customers over time also is ambiguous: on the one side, the value increases because

the customers generate cash flows over a longer lifetime ( $\Delta L^f$ ) and on the other side, the value decreases because the firm has to spend money to retain the customers over a longer period ( $\Delta L^h$ ).

$$(5) \quad \Delta L = \Delta L^f - \Delta L^h = \begin{aligned} & f_t(N_{t-1}, C_{t-1}, L_t) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\ & - h_t(N_{t-1}, L_t, CR_{t-1}) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \end{aligned} \quad (t \in T \setminus 1)$$

*Changes in customer retention expenditures.* The direct effect due to changes in customer retention expenditures over time is:

$$(6) \quad \Delta CR = -h_t(N_{t-1}, L_{t-1}, CR_t) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \quad (t \in T \setminus 1)$$

*Changes in the number of new customers.* The direct effect due to changes in the number of new customers over time equals:

$$(7) \quad \Delta N^N = -g_t(N_t^N, CA_{t-1}) + g_{t-1}(N_{t-1}^N, CA_{t-1}) \quad (t \in T \setminus 1)$$

*Changes in customer acquisition expenditures.* The direct effect due to changes in customer acquisition expenditures over time is determined by:

$$(8) \quad \Delta CA = -g_t(N_{t-1}^N, CA_t) + g_{t-1}(N_{t-1}^N, CA_{t-1}) \quad (t \in T \setminus 1)$$

Summing up, we get 8 direct effects ( $\Delta N^f$ ,  $\Delta N^h$ ,  $\Delta C$ ,  $\Delta L^f$ ,  $\Delta L^h$ ,  $\Delta CR$ ,  $\Delta N^N$ , and  $\Delta CA$ ). Furthermore, the interaction effects are two-way-effects (i.e., simultaneous variation of two metrics) and three-way-effects (i.e., simultaneous variation of three metrics). Because of Equation (2), we get 7 two-way-effects and 2 three-way-effects. Subsequently, we show the 7 two-way effects, whereas the effect due to a simultaneous variation in number of customers and expected lifetime of customers ( $\Delta N \times L$ ) is ambiguous again ( $\Delta N^f \times L^f$  and  $\Delta N^h \times L^h$ ).

$$(9) \quad \Delta N^f \times C = \begin{aligned} & f_t(N_t, C_t, L_{t-1}) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\ & - \Delta N^f - \Delta C \end{aligned} \quad (t \in T \setminus 1)$$

$$(10) \quad \begin{aligned} & \Delta N \times L \\ & = \Delta N^f \times L^f \\ & - \Delta N^h \times L^h = \end{aligned} \begin{aligned} & f_t(N_t, C_{t-1}, L_t) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) - \Delta N^f - \Delta L^f \\ & - h_t(N_t, L_t, CR_{t-1}) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) - \Delta N^h - \Delta L^h \end{aligned} \quad (t \in T \setminus 1)$$

$$(11) \quad \Delta N^h_x CR = \begin{aligned} & -h_t(N_t, L_{t-1}, CR_t) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \\ & - \Delta N^h - \Delta CR \end{aligned} \quad (t \in T \setminus 1)$$

$$(12) \quad \Delta C_x L^f = \begin{aligned} & f_t(N_{t-1}, C_t, L_t) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\ & - \Delta C - \Delta L^f \end{aligned} \quad (t \in T \setminus 1)$$

$$(13) \quad \Delta L^h_x CR = \begin{aligned} & -h_t(N_{t-1}, L_t, CR_t) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \\ & - \Delta L^h - \Delta CR \end{aligned} \quad (t \in T \setminus 1)$$

$$(14) \quad \Delta N^N_x CA = \begin{aligned} & -g_t(N_t^N, CA_t) + g_{t-1}(N_{t-1}^N, CA_{t-1}) - \Delta N^N - \Delta CA \end{aligned} \quad (t \in T \setminus 1)$$

Additionally, there are 2 three-way-effects:

$$(15) \quad \Delta N^f_x C_x L^f = \begin{aligned} & f_t(N_t, C_t, L_t) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1}) \\ & - \Delta N^f - \Delta C - \Delta L^f - \Delta N_x C - \Delta N^f_x L^f - \Delta C_x L \end{aligned} \quad (t \in T \setminus 1)$$

$$(16) \quad \Delta N^h_x L^h_x CR = \begin{aligned} & -h_t(N_t, L_t, CR_t) + h_{t-1}(N_{t-1}, L_{t-1}, CR_{t-1}) \\ & - \Delta N^h - \Delta L^h - \Delta CR - \Delta N^h_x L^h - \Delta N_x CR - \Delta L_x CR \end{aligned} \quad (t \in T \setminus 1)$$

In total, we get 17 effects. To accomplish the criteria for financial reporting (esp. relevance and understandability), the effects have to be combined in a meaningful way to allow interpretation. In general, the combination of effects is incumbent upon management because the supplement information in financial reporting should provide an analysis through the eye of management (International Accounting Standards Board 2005). Subsequently, we present one possible solution for combining the effects (see Figure 2) which is according to Figure 1 and Equation (2). Note that any other combination might be suitable as well.

Another reason for choosing this combination is that it enables to distinguish between effects due to changes in value (customer lifetime value effect; number of customers effect) and effects due to changes in retention and acquisition expenditures (marketing expenditures effect). Since three-way effects are difficult to allocate and are very small in amount, we add one category called “other” to capture these effects. This level of decomposition (decomposition level 1) provides insights about why Customer Equity has changed over time and whether value was created or not. Further decomposing the effects on level 1

(decomposition level 2) provides detailed insights about the value creation through acquisition as well as retention activities.

In Figure 2, we combine the effect due to changes in expected customer lifetime value which leads to customer cash flows over a longer period of time (1), the effect of changes in customer cash flow (2), and the interaction effect of simultaneous changes of these two customer metrics (3) to the customer lifetime value effect. This is done because these changes effect the customer lifetime value of a firm's current customer. Because  $\Delta N^f$  is a net effect of customers acquired during a period and customers lost during a period. Consequently, we weight  $\Delta N^f$  by the ratio of number of lost (respectively new customers) divided by the total change in number of customers to get the effect of changes in number of new customers

$$(17) \quad \Delta N_N^f = \frac{N_t^N}{N_t - N_{t-1}} \cdot [f_t(N_t, C_{t-1}, L_{t-1}) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1})] \quad (t \in T \setminus 1)$$

and number of lost customers:

$$(18) \quad \Delta N_L^f = \frac{N_t^L}{N_t - N_{t-1}} \cdot [f_t(N_t, C_{t-1}, L_{t-1}) - f_{t-1}(N_{t-1}, C_{t-1}, L_{t-1})] \quad (t \in T \setminus 1)$$

Hence, we get three direct effects due to changes in number of customers ( $\Delta N_N^f$ ,  $\Delta N_L^f$ , and  $\Delta N^h$ ). Obviously, we merge the weighted net effect due to number of customers acquired during a period (4) and lost during a period (5) to the number of customers effect. Furthermore, we integrate the interaction effects due to simultaneous variation of number of customers and customer cash flow (6) respectively customer lifetime (7) within the number of customers effect because they do not occur if there is no change in number of customers at all.

Looking at the marketing expenditures effect, we join 5 direct and 4 indirect effects. Apparently, the long-term retention expenditures effect contains the effect due to changes in customer retention expenditures (8). Moreover, we combine the retention expenditure effect

due to changes in number of customers (9) as well as changes in customer lifetime (11). The latter two effects are included here because they influence the total retention expenditures. Consequently, all associated interaction effects (10, 12, 13) are included there as well. The short-term acquisition expenditures effect consists of the effect due to changes in customer acquisition expenditures (14), the acquisition expenditure effect due to the number of new customers (15) and the associated interaction effect (16). Again the acquisition expenditure effect due to the number of new customers is included here because they influence the total acquisition expenditures. Finally, as stated before, the 2 three-way (17, 18) are combined as other.

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 ----- Insert Figure 2 -----  
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Furthermore, we introduce 5 additional long-term customer performance measures which assist to derive more detailed implications regarding the firm’s customer management activities (see Table 2):

*New Customer Value Creation.* This measure is the long-term value of new customers subtracted by the long-term investments to acquire and retain new customers. Hence, this measure shows whether or not long-term value is created through the new acquired customers.

*Return on New Customer Acquisition.* This measure is similar to the one before since it is the ration of the long-term value of new customers and the long-term investments to acquire and retain new customers minus 1. Consequently, this measure shows the return on investment of new customer acquisition.

*Incremental Acquisition Expenditures Effectiveness.* This measure is the ratio of the long-time value of new customers acquired in period t and long-time value of new customers acquired in period t-1 divided by the ratio of short-term investments to acquire new customers

in period t and short-term investments to acquire new customers in period t-1. This measure demonstrates the effectiveness of incremental investments in customer acquisition activities compared to previous periods. Hence, it enables to evaluate whether the firm was more effective with its incremental customer acquisition investments in terms of acquiring new customers. The range for this measure is  $[0, \infty]$  and the higher the measure the more effective the firm has been.

*Incremental Customer Lifetime Value Creation (per customer).* This measure is the long-term effect of changes in customer lifetime value (customer lifetime value effect in Figure 2) minus incremental long-term investments to retain one customer. Thus, it shows whether or not long-term customer lifetime value per customer was created through incremental customer retention activities compared to previous periods.

*Incremental Retention Expenditures Effectiveness.* This measure is the ratio of the long-time effect of changes in customer lifetime value in period t and the long-time effect of changes in customer lifetime value in period t-1 divided by the ratio of incremental long-term investments to retain customers in period t and incremental long-term investments to retain customers in period t-1. Consequently, this measure shows the effectiveness of incremental investments in customer retention activities. Again, the range for this measure is  $[0, \infty]$  and the higher the measure the more effective the firm has been.

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----- Insert Table 2-----  
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Netflix.com mentions in their financial reports that they review acquisition expenditures to evaluate how effective their marketing programs are in acquiring new subscribers on an economical basis. In our point of view, this economical basis reflects only a short-term perspective and underestimates the impact of their marketing programs. Long-term statements

can be derived if using those customer performance measures in conjunction with the “Customer Equity Statement” and “Customer Equity Flow Statement”.

### 3.2 Specific Model Formulation

*Calculating Customer Lifetime Value.* As one possible specific formulation, we propose a parsimonious and, hence, easily applicable Customer Equity formulation of the model. The individual customer lifetime value of a current customer including retention expenditures ( $CLV_i$ ) is calculated by the present value of her cash flow ( $C_{i,t'} - CR_{i,t'}$ ) over her lifetime ( $T_i$ ):

$$(19) \quad CLV_i = \sum_{t'=0}^{T_i} \frac{C_{i,t'} - CR_{i,t'}}{(1+k)^{t'}} \quad (i \in I)$$

To come up with an average CLV, we assume: (i) an average retention rate which is constant over time ( $T_i \rightarrow r$ ), (ii) average customer cash flows as well as average retention expenditures that are constant over time ( $C_{i,t'} - CR_{i,t'} = C - CR$ ). Using those assumptions, Equation (19) can be rewritten to describe the average lifetime value of a current customer:

$$(20) \quad CLV = \sum_{t'=0}^{\infty} \frac{(C - CR) \cdot r^{t'}}{(1+k)^{t'}} = \frac{(C - CR) \cdot r^0}{(1+k)^0} + \frac{(C - CR) \cdot r^1}{(1+k)^1} + \dots$$

Thereby, it is straight forward to further enhance the CLV formula into a segment-specific, channel-specific, region-specific, or business unit-specific CLV as well as incorporate a customer cash flow growth rate. Since (20) is an infinite geometric series for  $\left| \frac{r}{1+k} \right| < 1$ , (20) can be written as:

$$(21) \quad CLV = (C - CR) \cdot \frac{1+k}{1+k-r}$$

*Customer Equity Statement.* Using Equation (1) and Equation (21) leads to the following specification for the value of the customer base in period t:

$$(22) \quad CE_t = N_t^C \cdot C_t \cdot \frac{1+k}{1+k-r_t} - N_t^C \cdot CR_t \cdot \frac{1+k}{1+k-r_t} - N_t^N \cdot CA_t \quad (t \in T \setminus 1)$$

Consequently, the value of the customer base in period  $t-1$  is:

$$(23) \quad CE_{t-1} = N_{t-1}^C \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1}^C \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1}^N \cdot CA_{t-1} \quad (t \in T \setminus 1)$$

The difference between the values of the customer base in period  $t$  and  $t-1$  is:

$$(24) \quad \Delta CE_{t-1,t} = CE_t - CE_{t-1} = \left[ \begin{array}{l} N_t^C \cdot C_t \cdot \frac{1+k}{1+k-r_t} - N_t^C \cdot CR_t \cdot \frac{1+k}{1+k-r_t} - N_t^N \cdot CA_t \\ - \left[ N_{t-1}^C \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1}^C \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1}^N \cdot CA_{t-1} \right] \end{array} \right] \quad (t \in T \setminus 1)$$

Equation (22), (23), and (24) together form the “Customer Equity Statement” for the specific Customer Equity formulation.

*Customer Equity Flow Statement.* Besides the absolute value of a firm’s customer base and the difference between the values of a customer base in two subsequent periods, the effects of changes (i.e., the decomposition of the total variance) is of interest. The “Customer Equity Flow Statement” provides this information. Table 3 lists all effects according to Figure 2:

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 ----- Insert Table 3 -----  
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The presented approach is one possible solution for a performance measurement approach for financial reporting purposes. The approach is consistent with the necessary criteria presented in Table 1. It takes future cash flows into account (future-orientation) and decomposes changes in Customer Equity into its several effects (decomposition). Furthermore, the approach uses accounting or other objective data as inputs (objectivity), is standardized and does not depend on specific data (comparability). Due to its similarity to discounted cash flow approaches and the combining of effects, the approach is easy to understand for decision makers (simplicity) and does not need costly data collections (cost-effectiveness).

## 4 Illustrative Application

### 4.1 Data

Since Netflix.com already provides information about customer churn, subscribers' acquisition cost, and gross margin as well as reviews these metrics to evaluate the effectiveness of their operational strategies, we apply our approach to Netflix.com. In doing so, our aim is (i) to illustrate that it is more appropriate to look at the effects of changes of the long-term value of the customer base as well as those additional long-term customer performance measures than looking at short-term customer metrics, and (ii) to demonstrate the applicability and usefulness of the approach.

We use quarterly publicly available data from annual reports, 10-K and 10-Q statements, and other company reports for the period from September 2001 to September 2005. The data for each quarter include number of subscribers (free, paid, and total), subscription revenue, subscription cost of revenue, operating expenses, monthly churn rate, subscribers' acquisition cost, and marketing expenditures. Using these data, we calculate the quarterly subscription cash flow per customer by subtracting the quarterly subscription cost of revenue and quarterly operating expenses without marketing from the quarterly subscription revenue and divide it by the quarterly number of paid subscribers. Because Netflix.com reports a monthly churn rate, we determine the quarterly retention rate by cubing the term  $(1 - \text{reporting monthly churn rate})$ . Furthermore, we calculate the quarterly number of lost customers by multiplying the previous period's number of paid customers with the quarterly churn rate and determine the number of new customers by adding the quarterly number of lost customers to the difference in quarterly number of paid subscribers of two subsequent quarters. Moreover, we use the reported quarterly subscribers acquisition cost as quarterly acquisition expenditures. No information is given about the discount rate and the retention expenditures. Hence, we choose the annual discount rate to be 10% (quarterly discount rate amounts to 2.41%) and neglect retention expenditures although this reduces the interpretation of our results. For illustration reasons,

Table 4 lists only the resulting customer metrics for the second and third quarter of 2005. Furthermore, it lists the customer metrics for the third quarter of 2004 because in financial reports, operating results are often compared to the preceding quarter of the current year as well as the same quarter in the previous year.

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---- Insert Table 4----  
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In their 10-Q statement, Netflix.com mentions that management (i) reviews churn rate to evaluate whether they are retaining their existing subscribers in accordance with their business plans, (ii) reviews acquisition expenditures to evaluate how effective their marketing programs are in acquiring new subscribers on an economical basis, and (iii) believes that it is useful to monitor these metrics together and not individually as they do not make business decision based upon any single metric. Looking at the customer metrics in Table 4 shows that Netflix.com was able to increase their customer base by approximately 60% between the third quarter in 2004 and 2005 and by about 10% between the two subsequent quarters in 2005. Similarly, Netflix.com increased their quarterly number of new customers by approximately 61% (14%) between the third quarter in 2004 and the third quarter in 2005 (second quarter 2005 and third quarter 2005). The quarterly number of lost customers increased by approximately 20% between the two third quarters and decreased by around 1% between the two quarters of 2005. Customer cash flow has decreased by approximately 41% over the year but increased by about 12% between Q2 and Q3 2005. Acquisition expenditures have developed pretty nicely with a decrease of approximately 4% during the year and 7% between the quarters. The retention rate increase during the year by about 4% and between the second and third quarters by 1%.

Nevertheless, monitoring these customer metrics does not allow any statement about the long-term contribution of Netflix.com's activity. Although Netflix.com mentions that they

review acquisition expenditures to evaluate how effective their marketing programs are in acquiring new subscribers on an economical basis, this economical basis reflects only a short-term perspective and underestimates the impact of their marketing programs. Long-term statements can be derived when using the customer metrics to calculate customer lifetime values (using Equation (21)), Customer Equity (using Equation (22)) and the additional long-term customer performance measures.

### 4.2 Customer Equity Statement

Table 5 shows the Customer Equity Statement. Netflix.com’s Customer Equity increased about 36% from \$ 208.42 million in September 2004 to \$ 238.68 million in September 2005, whereas the Customer Equity in the second quarter of 2005 is almost 16% lower than the Customer Equity in September 2004. Customer Equity increased approximately 15% in Q3 2005. Looking at the changes of Customer Equity over a quarter reveal that the long-term value of Netflix.com’s customer base increased in all quarters in Table 5. Note that Table 5 shows the change in Customer Equity in the stated quarters.

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---- Insert Table 5----  
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Figure 3 illustrates that changes in Customer Equity over time have been relatively volatile since second quarter of 2004 compared to the preceding quarters, whereas we cannot observe any trend.

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---- Insert Figure 3----  
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Hence, the Customer Equity Statement shows that the long-term value of Netflix.com’s customer base increased over time. Merely looking at the quarterly customer metrics does not enable to conduct statements concerning the long-term contribution of Netflix.com’s customer

base. The Customer Equity Statement, which monitors the Customer Equity over time, provides management and investors with information about the development of the long-term value of the customer base. Nevertheless, it does not provide information about the sources of changes in Customer Equity over time which enhances the analysis. This is offered by the Customer Equity Flow Statement which is subject of the next section.

### **4.3 Customer Equity Flow Statement**

Table 6 shows Netflix.com's Customer Equity Flow Statement. The effects are combined according to Figure 2. As mentioned before, there is no retention expenditure effect because of lack of data. Again, the Customer Equity Flow Statement in Table 6 enables management and investors to compare the operating results to the preceding quarter of the current year as well as the same quarter in the previous year.

Netflix.com's third quarter Customer Equity in 2005 increased close to \$ 63.30 million compared to an increase in Customer Equity about \$ 48.45 million in the second quarter of 2005. This increase was mainly due to a positive customer lifetime value effect (\$ 41.30 million) which amounted to 65% of the total decrease of Customer Equity and was higher than in the second quarter (\$ 28.40 million). Further decomposing this effect illustrates that there was a positive change in customer lifetime (\$ 14.69 million) as well as customer cash flow (\$ 24.78 million). Again, both effects were higher than the previous quarter in that year. Not considering the C/L interaction effect (i.e., simultaneous variation of customer cash flow and retention rate) would lead to an underestimation of the customer lifetime effect in the second and third quarter of 2005.

The number of customer effect was positive (\$ 23.99 million) mainly because of a positive new customer effect (\$ 44.48 million). But they also decreased its value of the customer base by losing customers (\$ -24.47 million). The new customer effect shows an increased development compared to the second quarter, whereas the lost customer effect increases as well due to a higher customer base. Netflix.com decreased their acquisition expenditures per

customer in Q3 2005 compared to Q2 2005 which led to a positive acquisition expenditures effect (\$ 0.95 million) and acquired more new customers compared to the second quarter of 2004 which led to a negative expenditures effect due to the number of new customers (\$ -3.27 million). Hence, Netflix.com was able to decrease the acquisition expenditures effect in two subsequent periods but acquired in the second quarter of 2005 fewer customers than in the first quarter of 2005 (0.76 million new customers in Q1 2005 versus 0.61 million new customers in Q2 2005).

Compared to the third quarter in 2004, Netflix.com was not able to increase its customer cash flow that much but increased the customer lifetime this quarter. Nevertheless, the customer lifetime value effect was approximately half of that in Q3 2004. Furthermore, the increase in the lost customer effect was higher than in the third quarter 2004 although it was about the same in the second quarter of 2005. Contrarily, Netflix.com was able to further increase its new customer effect compared to the third quarter of 2004.

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----- Insert Table 6-----  
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Figure 3 illustrates the development of the several effects over time. One can see that there is a positive (negative) trend in the new (lost) customer effect over time. The other effects have been relatively volatile since second quarter 2004 compared to the preceding quarters, whereas the marketing expenditures effects has been quit volatile over the whole 15 quarters. Nevertheless, we cannot observe any seasonal effects.

**4.4 Additional Long-Term Customer Performance Measures**

Finally, Table 7 illustrates the values of our additional long-term customer performance measures explained in Table 2. The reason for those additional measures is that they enhance the analysis for managers and investors. They are much more appropriate to evaluate how effective Netflix.com’s marketing programs were in acquiring new subscribers on an

economical basis than looking at the acquisition expenditures as it is done by the management so far. Thereby, we are only able to present 4 out of 5 measures because of the lack of data concerning the retention expenditures. As a result of the same reason, the incremental customer lifetime value creation equals the customer lifetime value effect in Table 6.

In all quarters, Netflix.com was able to create long-term value through new customer acquisition. In the third quarter of 2005, the long-term investments to acquire and retain new customers amount to \$ 24.91 million, compared to \$ 22.73 million in the second quarter of 2005 and \$ 16.51 million in the third quarter of 2004. Subtracting these amounts from the long-term value of new customers (new customer effect in Table 6), leads to value creation through new customer acquisition of \$ 19.57 million in the third quarter of 2005, \$ 10.15 million in the second quarter of 2005, and \$ 10.61 million in the third quarter of 2004.

Apparently, the return on new customer acquisition is positive and yields 79% in the third quarter of 2005, 45% in the second quarter of 2005, and 64% in the third quarter of 2004. The incremental acquisition expenditures effectiveness is 1.23 in the third quarter of 2005, 0.63 in the second quarter of 2005, and 0.82 in the third quarter of 2004. This measure demonstrates the effectiveness of incremental investments in customer acquisition activities compared to previous periods. Hence, it enables to evaluate whether the firm was more effective with its incremental customer acquisition investments in terms of acquiring new customers. The range for this measure is  $[0, \infty]$  and the higher the measure the more effective the firm has been. As a result, Netflix.com was more effective in acquiring new customers in the third quarter of 2005 compared to the second quarter in 2005 and the third quarter in 2004. This is because in the third quarter of 2005, Netflix.com was able to gain approximately 35% more value from new customer acquisition compared to the preceding quarter, whereas the expenditures increased only by about 10%. Comparably, although Netflix.com decreased its acquisition expenditures by around 21% in the second quarter of 2004, it also decreased the value of new customers by approximately 50%. In the third quarter of 2004, Netflix.com also decreased its value of new

customers compared to the preceding quarter by about 18% but was able to maintain the acquisition expenditures on the same level.

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----- Insert Table 7-----  
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Summing up, Netflix.com is on a good track. In all quarters we looked at, Netflix.com was able to increase its customer cash flow compared to the previous quarter. This could be, for example, because of higher usage of its service, more profitable customers, and/or more effective handling or economies of scale and, hence, lower operating expenses. Furthermore, in 2 out of 3 quarters, Netflix.com increased customer retention which could be, for example, because of higher customer satisfaction or inferior offers from competitors. This had also an effect of the decrease in the lost customer effect over time although Netflix.com had a higher customer base. Hence, Netflix.com was able to better retain their customers which led to higher value of their customer base. The net effect of the changes in number of customers increased in the four quarters and Netflix.com was able to create long-term value through their marketing activities in all quarters.

**5 Conclusions, Limitations, and Future Research**

This paper proposes a performance measurement approach which is in line with the financial reporting criteria and focuses on the value of a firm’s customer base (Customer Equity). The approach provides relevant performance metrics for monitoring customer management activities (on a strategic level), reduces information asymmetries, assists communicating value and customer-orientation, and enables external addressees to monitor firm performance. In particular, our approach enables to monitor the Customer Equity over time (Customer Equity Statement), decompose changes in Customer Equity over time (Customer Equity Flow Statement), and enables to derive more detailed implications regarding the firm’s customer management activities. The main purpose of the Customer Equity

Statement and Customer Equity Flow Statement is to visualize the development of the customer base value, the existence of possible negative evolutions, and the sources of changes in Customer Equity. As such, it illustrates the management that a decrease in Customer Equity over time could be, for example, due to a decrease in customer retention. Nevertheless, it does not provide the reasoning of the decrease in customer retention, which might be due to, for example, a decrease in customer satisfaction or superior offers from competitors. Identifying the reasons of change in customer metrics has to be done on a more operational level (e.g., which products to sell to which customers) and is not in the scope of this strategic approach. We demonstrate the applicability of the approach by applying it to the customer base of Netflix.com and visualize the insight one can get out of such an analysis.

Our approach is subject to limitations, which suggest opportunities for further research. First, although our analysis offers generalizability over a large number of firms, we study only one single firm. Further research might examine the customer base of multiple firms and/or different industries. Second, our approach is also able to incorporate customer retention expenditures to measure the value creation. Because no retention expenditure information was given, further research could include retention expenditure data from, for example, firms or external sources. Third, the specific formulation of our model is one possible solution. Thereby, we assume constant retention rates, customer cash flow, and retention as well as acquisition expenditures. Further research could come up with a more sophisticated customer lifetime value und Customer Equity formulation which would, for example, incorporate varying retention rates or customer cash flow over time. All the foregoing research opportunities have implication for data collection and, more important, on simplicity. Yet, when relaxing the assumptions of the specific model, the criteria for financial reporting have to be kept in mind. Finally, firms might fear revealing information about their customer base to external addresses such as competitors. Although this fear is valid on an individual customer basis, competitors do not get much insight if firms report the value of its customer base by

segment or on firm level. Nevertheless, recent research has shown that information about customer relationships could improve decision making. This state of affairs is unlikely to change unless shareholders, corporate boards, and investors put more pressure on companies to provide this information.

Summing up, due to new accounting regulations, the value of intangibles assets such as brands and customers is required to be stated within financial reports. These developments increase the demand for suitable approaches to value intangible assets. Our performance measurement approach provides a starting point for considering the value of the customer base in a firm's financial report. We emphasize that the approach should supplement and complement current information in financial statements as it is asked for by SEC and IASB. Marketing literature has developed and discussed the concept of Customer and Brand Equity in depth. Hence, marketing academics should take a leading role in transferring that knowledge to other areas such as accounting or finance.

# 6 Figures and Tables

Figure 1: Potential Sources for Changes in Customer Equity over Time

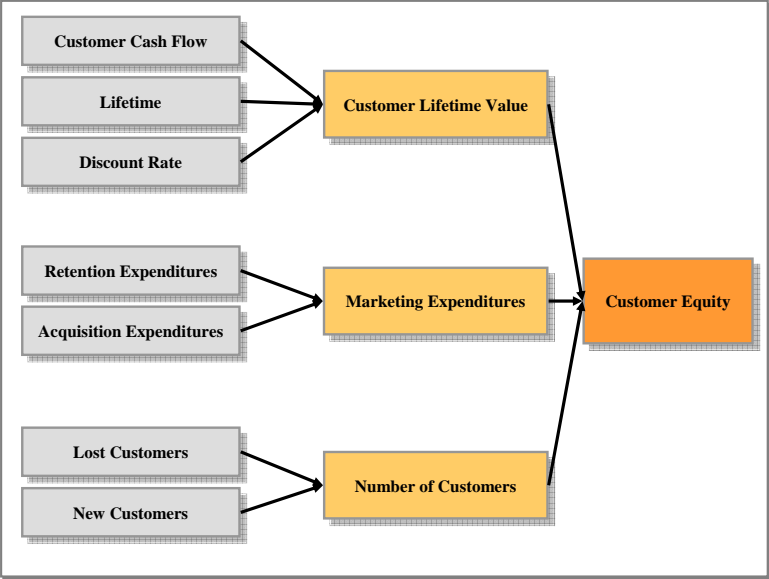


Figure 2: Combining of Effects

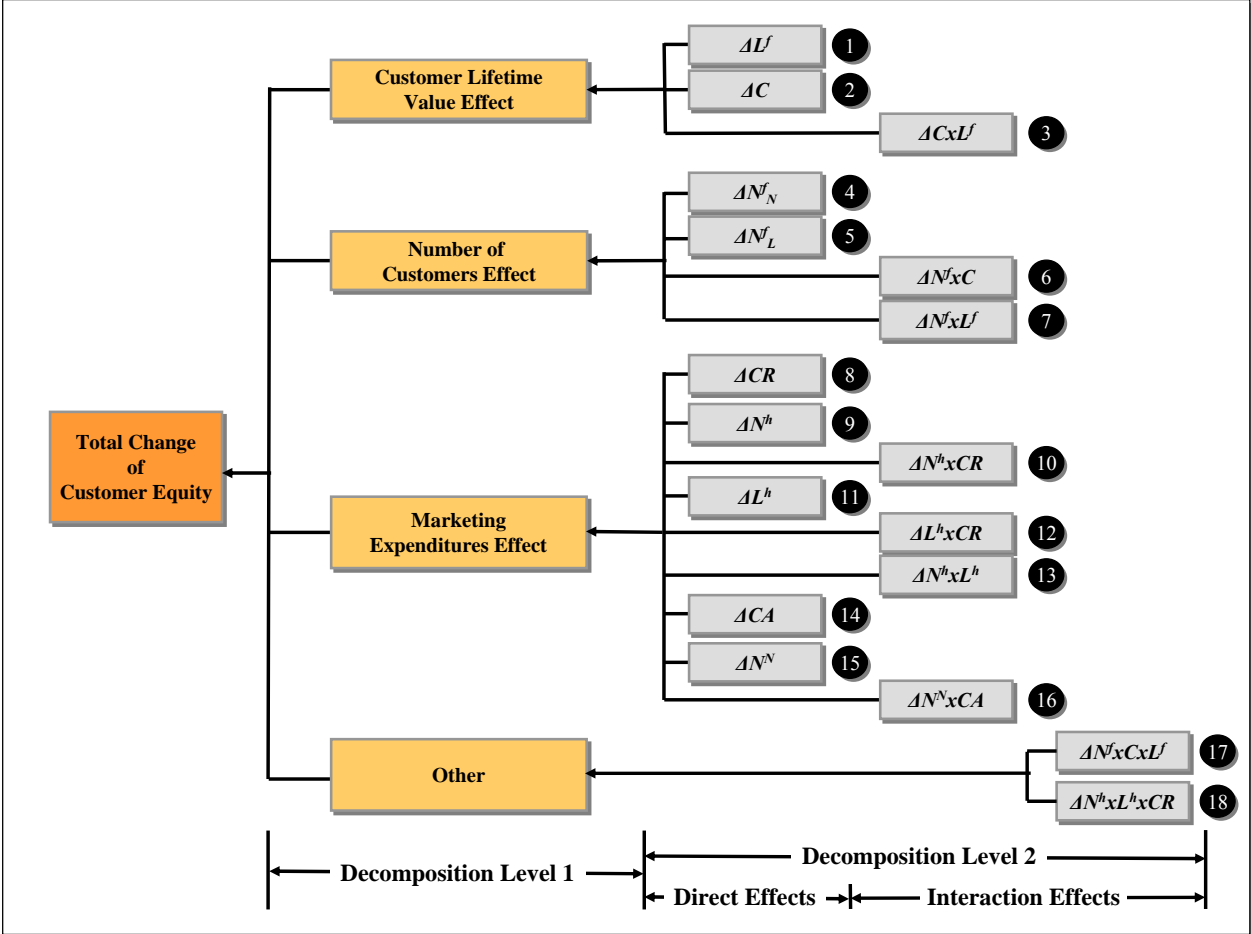
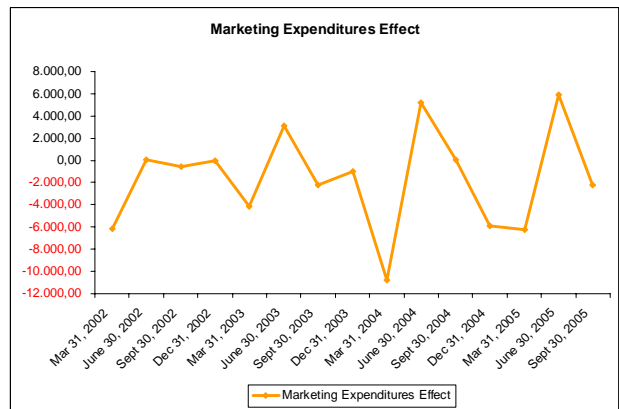
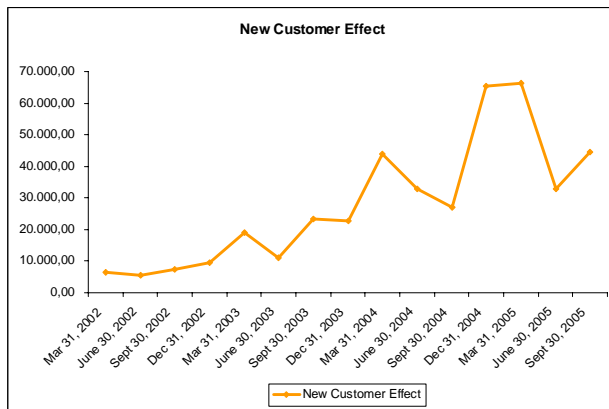
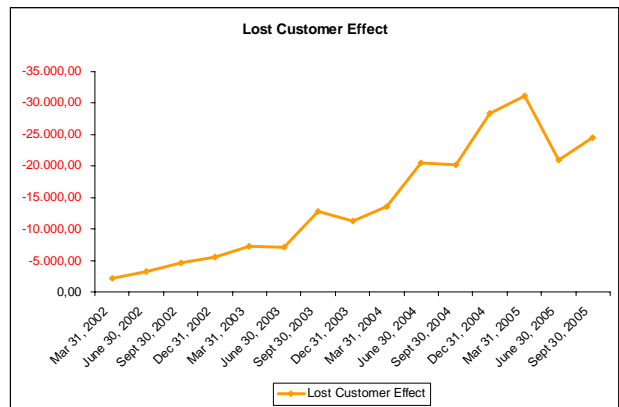
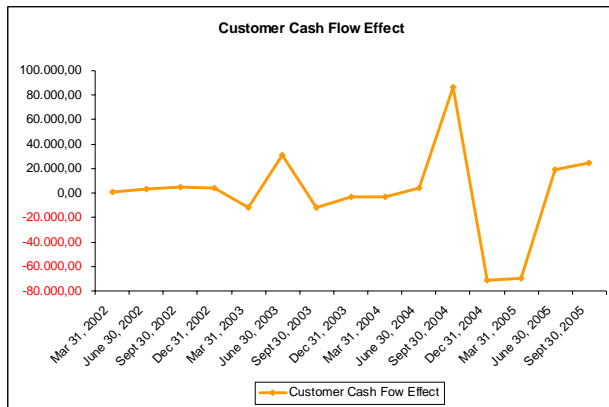
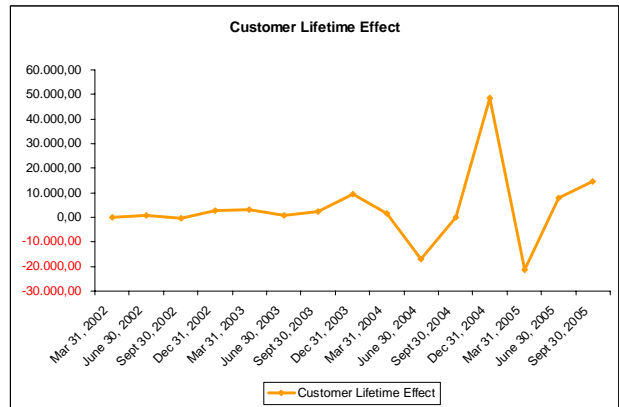
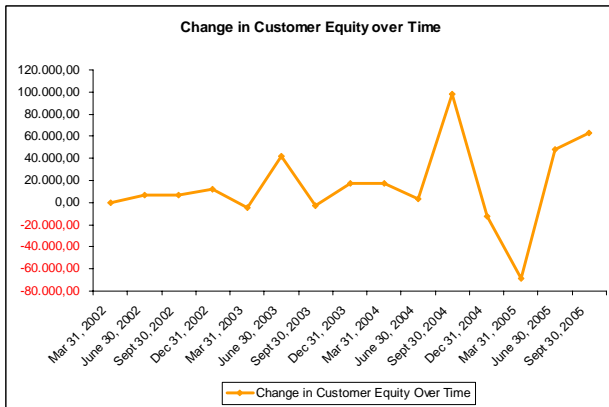


Figure 3: Effects over Time



*Table 1: Financial Reporting Criteria*

Qualitative Characteristics and their Definition	Derived Critical Criteria for Customer Equity Models
<p><b>Relevance</b>                      "The capacity to influence the economic decisions of users by helping them evaluate past, present or future events or confirming, or correcting, their past evaluations."</p>	<ul style="list-style-type: none"> <li>■ Future-orientation</li> <li>■ Decomposition</li> </ul>
<p><b>Reliability<sup>1)</sup></b>                      "Information has the quality of reliability when it is free from material error, faithfully represents that which it either purports to represent or could reasonably be expected to represent, and is free from bias."</p>	<ul style="list-style-type: none"> <li>■ Objectivity</li> </ul>
<p><b>Comparability<sup>2)</sup></b>                      "The quality of information that enables users to identify similarities in and differences between two sets of economic phenomena"</p>	<ul style="list-style-type: none"> <li>■ Comparability</li> </ul>
<p><b>Understandability</b>                      "The quality of information that enables users to readily understand its significance"</p>	<ul style="list-style-type: none"> <li>■ Simplicity</li> </ul>
<p><b>Benefits &gt; Costs</b></p>	<ul style="list-style-type: none"> <li>■ Cost-effectiveness</li> </ul>

<sup>1)</sup> In the IASB discussion paper, reliability is broken down into supportability and balance. Thereby, "free from material error" and "represents faithfully" is addressed in "supportability" and "free from bias" in "balance"

<sup>2)</sup> In the IASB discussion paper, they concluded that the ability to compare the MC of an entity over time is important characteristic conflicts with the objective of requiring management to convey what it believes is important.

Table 2: Additional Long-Term Customer Performance Measures

No.	Description	Calculation
1	<p><b>New Customer Value Creation</b></p> <p>This measure shows whether or not long-term value is created through the new acquired customers (long-term value of new customers minus the long-term investments to acquire and retain new customers)</p>	$\Delta N_{N,t}^f - (g_t + h_t^N)$
2	<p><b>Return on New Customer Acquisition</b></p> <p>This measure shows the return on investment of new customer acquisition (long-time value of new customers divided by long-term investments to acquire and retain new customers minus 1)</p>	$\frac{\Delta N_{N,t}^f}{g_t + h_t^N} - 1$
3	<p><b>Incremental Acquisition Expenditures Effectiveness</b></p> <p>This measure shows the effectiveness of incremental investments in customer acquisition activities (ratio of long-time value of new customers acquired in period t and long-time value of new customers acquired in period t-1 divided by the ratio of short-term investments to acquire new customers in period t and short-term investments to acquire new customers in period t-1)</p>	$\frac{\Delta N_{N,t}^f / \Delta N_{N,t-1}^f}{g_t / g_{t-1}}$
4	<p><b>Incremental Customer Lifetime Value Creation (per customer)</b></p> <p>This measure shows whether or not long-term customer lifetime value was created through incremental customer retention activities (long-term effect of changes in customer lifetime value minus incremental long-term investments to retain customers)</p>	$CLV\ effect_t - (\Delta CR_t + \Delta L_t^h + \Delta L_t^h \times CR_t)$
5	<p><b>Incremental Retention Expenditures Effectiveness</b></p> <p>This measure shows the effectiveness of incremental investments in customer retention activities (ratio of long-time effect of changes in customer lifetime value in period t and long-time effect of changes in customer lifetime value in period t-1 divided by the ratio of incremental long-term investments to retain customers in period t and incremental long-term investments to retain customers in period t-1)</p>	$\frac{CLV\ Effect_t / CLV\ Effect_{t-1}}{(\Delta CR_t + \Delta L_t^h + \Delta L_t^h \times CR_t) / (\Delta CR_{t-1} + \Delta L_{t-1}^h + \Delta L_{t-1}^h \times CR_{t-1})}$

Table 3: Specific Formulation: Direct and Indirect Effects

1	$\Delta L^f = N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} = \left( \frac{1+k}{1+k-r_t} - \frac{1+k}{1+k-r_{t-1}} \right) \cdot C_{t-1} \cdot N_{t-1}$
2	$\Delta C = N_{t-1} \cdot C_t \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} = (C_t - C_{t-1}) \cdot N_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}}$
3	$\Delta CxL^f = N_{t-1} \cdot C_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - \Delta C - \Delta L^f = \left( C_t \cdot \frac{1+k}{1+k-r_t} - C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \cdot N_{t-1} - \Delta C - \Delta L^f$
4	$\Delta N_N^f = \frac{N_t^N}{N_t - N_{t-1}} \cdot \left[ N_t \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right] = \frac{N_t^N}{N_t - N_{t-1}} \cdot \left[ (N_t - N_{t-1}) \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right]$
5	$\Delta N_L^f = \frac{N_t^L}{N_t - N_{t-1}} \cdot \left[ N_t \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right] = \frac{N_t^L}{N_t - N_{t-1}} \cdot \left[ (N_t - N_{t-1}) \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right]$
6	$\Delta N^f xC = N_t \cdot C_t \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - \Delta N^f - \Delta C = (N_t \cdot C_t - N_{t-1} \cdot C_{t-1}) \cdot \frac{1+k}{1+k-r_{t-1}} - \Delta N^f - \Delta C$
7	$\Delta N^f xL^f = N_t \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - \Delta N^f - \Delta L^f = \left( N_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \cdot C_{t-1} - \Delta N^f - \Delta L^f$

8	$\Delta CR = -\left[ N_{t-1} \cdot CR_t \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right] = -\left[ (CR_t - CR_{t-1}) \cdot N_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right]$
9	$\Delta N^h = -\left[ N_t \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right] = -\left[ (N_t - N_{t-1}) \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right]$
10	$\Delta N^h \times CR = \left[ -\left( N_t \cdot CR_t \cdot \frac{1+k}{1+k-r_{t-1}} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \right] - \Delta N^h - \Delta CR = \left[ -\left( N_t \cdot CR_t - N_{t-1} \cdot CR_{t-1} \right) \cdot \frac{1+k}{1+k-r_{t-1}} \right] - \Delta N^h - \Delta CR$
11	$\Delta L^h = -\left[ N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right] = -\left[ \left( \frac{1+k}{1+k-r_t} - \frac{1+k}{1+k-r_{t-1}} \right) \cdot CR_{t-1} \cdot N_{t-1} \right]$
12	$\Delta L^h \times CR = \left[ -\left( N_{t-1} \cdot CR_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \right] - \Delta L^h - \Delta CR = \left[ -\left( CR_t \cdot \frac{1+k}{1+k-r_t} - CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \cdot N_{t-1} \right] - \Delta L^h - \Delta CR$
13	$\Delta N^h \times L^h = \left[ -\left( N_t \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \right] - \Delta N^h - \Delta L^h = \left[ -\left( N_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \cdot CR_{t-1} \right] - \Delta N^h - \Delta L^h$
14	$\Delta CA = -\left[ N_{t-1}^N \cdot CA_t - N_{t-1}^N \cdot CA_{t-1} \right] = -\left[ (CA_t - CA_{t-1}) \cdot N_{t-1}^N \right]$
15	$\Delta N^N = -\left[ N_t^N \cdot CA_{t-1} - N_{t-1}^N \cdot CA_{t-1} \right] = -\left[ (N_t^N - N_{t-1}^N) \cdot CA_{t-1} \right]$

16	$\Delta N^N xCA = \left[ - \left( N_t^N \cdot CA_t - N_{t-1}^N \cdot CA_{t-1} \right) \right] - \Delta N^N - \Delta CA$
17	$\Delta N^f xCxL^f = N_t \cdot C_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot C_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} - \Delta N^f - \Delta C - \Delta L^f - \Delta N^f xC - \Delta N^f xL^f - \Delta CxL^f$
18	$\Delta N^h xL^h xCR = \left[ - \left( N_t \cdot CR_t \cdot \frac{1+k}{1+k-r_t} - N_{t-1} \cdot CR_{t-1} \cdot \frac{1+k}{1+k-r_{t-1}} \right) \right] - \Delta N^h - \Delta L^h - \Delta CR - \Delta N^h xL^h - \Delta N^h xCR - \Delta L^h xCR$

Table 4: Customer Metrics

	<b>Sept 30, 2004</b>	<b>June 30, 2005</b>	<b>Sept 30, 2005</b>
<b>Total Customers (in Tsd.)</b>	2.135	3.109	3.423
<b>New Customers (in Tsd.)</b>	432	610	698
<b>Lost Customers (in Tsd.)</b>	321	388	384
<b>Customer Cash Flow (in \$)</b>	18,81	9,87	11,10
<b>Retention Rate</b>	0,84	0,87	0,88
<b>Retention Expenditures (in \$)</b>	0,00	0,00	0,00
<b>Acquisition Expenditures (in \$)</b>	38,18	37,25	35,69

**Table 5: Customer Equity Statement (in Tsd. \$) [Punkte und Komma]**

	<b>Sept 30, 2004</b>	<b>June 30, 2005</b>	<b>Sept 30, 2005</b>
<b>Customer Equity</b>	208.420,52	175.376,47	238.678,34
<b>Change</b>	98.054,25 89%	48.447,31 38%	63.301,86 36%

Table 6: Customer Equity Flow Statement (in Tsd. \$)

No.	Name	Sept 30, 2004	June 30, 2005	Sept 30, 2005
	<b>Customer Lifetime Value Effect</b>	86.293,03 88%	28.404,16 59%	41.304,53 65%
1	<b>Customer Lifetime Effect</b>	0,00	7.993,04	14.686,15
2	<b>Customer Cash Fow Effect</b>	86.293,03	19.413,59	24.781,29
3	<b>C/ L Interaction Effect</b>	0,00	997,53	1.837,09
	<b>Number of Customers Effect</b>	11.694,12 12%	14.069,29 29%	23.994,40 38%
4	<b>New Customer Effect</b>	27.115,66	32.880,71	44.481,05
5	<b>Lost Customer Effect</b>	-20.154,01	-20.918,89	-24.472,74
6	<b>Nf/C Interaction Effect</b>	4.732,47	1.492,84	2.502,84
7	<b>Nf/Lf Interaction Effect</b>	-0,00	614,64	1.483,26
	<b>Marketing Expenditures Effect</b>	67,09 0%	5.897,15 12%	-2.182,61 -3%
8-13	<b>Retention Exp. Effect</b>	0,00	0,00	0,00
14	<b>Acquisition Exp.-Effect</b>	-1.444,09	483,56	951,97
15	<b>Number-CA-Effect</b>	1.390,07	5.506,60	-3.271,59
16	<b>NN/CA Interaction Effect</b>	121,12	-93,01	137,01
17/18	<b>Other</b>	0,00 0%	76,71 0%	185,54 0%
	<b>Sum</b>	98.054,25 100%	48.447,31 100%	63.301,86 100%

*Table 7: New Customer Performance Metrics*

No.	Name	Sept 30, 2004	June 30, 2005	Sept 30, 2005
1	New Customer Value Creation	10.608,70	10.149,47	19.567,19
2	Return on New Customer Acquisition	64%	45%	79%
3	Incremental Acquisition Expenditures Effectiveness	0,82	0,63	1,23
4	Incremental Customer Lifetime Value Creation (per customer)	86.293,03	28.404,16	41.304,53
5	Incremental Retention Expenditures Effectiveness	n/a	n/a	n/a

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