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Optimality of Customer Relationship Management: Does Profitability Really Matter?*

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Managing customers based on customer equity (CE) has emerged as the most effective way of doing business because of its ability to foster profitable customer relationship management (CRM) through appropriate marketing activities. Most research studies provide conceptual and empirical evidence of the positive link between CE and firm performance. However, regarding this possibility, it has been suggested by some researchers that this link may not hold true for other firms with different firmographic factors, such as firm growth rate, size, and resources. As previous research emphasizes that marketing managers should implement a strategy based on their unique business environment, our study addresses this issue by extending the framework to a different industry setting to investigate the impact of CE on firm performance. We develop a model for examining the relationship between the firm's estimated CE and firm performance by each time period using a distributed lagged model. Then, we investigate the effect of CE on the firm's profitability using a regression analysis. Finally, even though CRM is in increasing demand and firms are focusing on the customer as an asset, we conclude that there is a limited condition for this positive effect of CE. When the life cycle was divided by growth rate, CE was shown to have a distinctive effect on profit. In the case of a high-growth stage, the effect of CE on profit is positive because of its potential customer base, whereas the effect is not significant in a low-growth stage. That is, when the business environment is saturated and the firms are no longer competing in the market, CRM may not be effective. In other words, a long-term performance orientation may not be as effective as previously believed. This research contributes to the previous literature, providing a counterintuitive suggestion that firm managers should be cautious about implementing a CRM strategy and should allocate resources properly in terms of their resource capabilities and ability depending on their situation.

Key words: Customer Relationship Management, Customer Equity, Customer Lifetime Value, Growth Rate, Marketing Accountability

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I. Introduction

Many firms are now focusing on identifying their most valuable customers and cultivating long-term relationships with these profitable customers. Companies thus spend considerable effort acquiring and retaining customers, and researchers have studied this issue of customer relationship management (CRM). Given this widespread interest in customer relationship-centric marketing, customer lifetime value (CLV) and customer equity (CE) have recently been popular and important topics in marketing. The term CLV refers to the present value of all future cash flows attributed to a customer relationship. Marketers realize that the ultimate measure of firm performance is CE, which is the sum of the CLVs of a firm's customers (Hanssens et al. 2009; Srinivasan and Hanssens 2009; Wiesel et al. 2008).

To date, studies have focused their attention on linking CE to firm value. CE has emerged as a powerful tool to maximize the return on marketing investments and to guide the allocation of the marketing budget (Blattberg and Deighton 1996; Reinartz et al. 2005; Rust et al. 2004). However, marketing academics have criticized strategies that maximize long-term profit through CRM (Boulding et al. 2005; Musalem and Joshi 2009; Reinartz and Kumar 2000; Shugan 2005; Villanueva et al. 2007). Some research indirectly shows that as a short-term profit orientation is more profitable than a long-term profit focus in competition, the latter might not be an optimal strategy (Villanueva et al. 2007). Researchers have reported that marketing customization (e.g., target pricing, coupon targeting, one-to-one promotions), one of the efficient tools of CRM, could intensify competition in a competitive market (Shaffer and Zhang 1995; Shaffer and Zhang 2002). Downling and Uncles (1997) warned that long-term customer transactions do not always help to increase profits and might not help to lessen marketing expenditures. Reinartz and Kumar (2000) also empirically investigated this issue of the efficiency of a long-term focus.

Researchers show that long-term relationship management is not always the optimal strategy for all firms in the market (Fruchter and Zhang 2004; McGahan and Ghemawat 1994). In addition, practitioners often make short-term profit-orientated decisions regardless of the long-term effect of CRM. In practice, managers may tend to prefer short-term profit maximization to long-term profit maximization in order to increase their reputation and employees' wages (Narayanan 1985). Approximately 80% of marketing managers claim that they are willing to curtail discretionary marketing expenditures, such as advertising, to avoid missing short-term revenues (Kimbrough et al. 2009).

To address this research question, by focusing on external environmental factors such as firm growth rate, we empirically explore the effect of firm life cycle on the relationship between CE and firm profitability using a small and medium-sized firm. We use 42 months of time-series individual-level transaction data from an Internet shopping mall in Korea. We develop a model for examining the relationship between the firm's estimated CE and firm performance (profit) for each time period using a distributed lagged model (Koyck 1954) based on CE and CLV models (e.g., BG/NBD Model) from previous research (Dwyer 1997; Fader et al. 2005; Gupta et al. 2004; Gupta et al. 2006; Reinartz and Kumar 2000; Schmittlein et al. 1987; Schmittlein et al. 1994). Then, we explore the effect of CE on the firm's profitability over time with a regression analysis.

The results of this study are not consistent with previous research that has shown that CE has a positive effect on a firm's profit during the whole period of the firm's existence. That is, CE might not always be positively related with the firm's profitability. The effect of CE on a firm's profitability is relatively smaller in the later stages of a firm due to the following reasons. First, in the later part of a firm's life cycle, compared to the early part, the market is already saturated, and firms must put in more effort to retain their existing customers and avoid having them taken away by competitors. This may eventually lead to a decrease in the firm's profit. Previous research has addressed the issue of over-investment in CRM activities, noting that in a saturated market, considering the fact that a firm's effort to improve CE increases the possibility of over-investment in marketing expenditure, maximizing CE may not be an appropriate strategy; rather, short-term profit maximization may be a more effective strategy. Second, our key finding is that CLV may not be effective in some contexts when the company does not have enough resources and capabilities to manage this relationship. Although the CRM literature emphasizes the importance of strong customer management to generating profits, firms might spend too much effort on managing customers who are not profitable to the firm and who would have purchased anyway. In particular, in non-contractual situations, firms often do not know how many active customers they have or the probability of a particular customer buying again from the firm. Finally, there may be a non-significant relationship between CE and profitability due to the size of the firm. That is, the effect of CE may not hold true for small and medium-sized enterprises (SMEs) that have relatively small budgets and managers with powerful influence on decision making. Consequently, this study finds that the link between CE and performance might differ depending on a firm's characteristics. With the conclusions of the empirical analyses in this study, we can raise a new doubt, whether the profitability or financial performance is really important and sole metric to measure the performance of CRM activities in that the relationship between CE and profitability might differ depending on the environment factors regardless of its implementation.

To sum up, this study contributes to the existing literature by investigating the possibility of a non-positive relationship (unlike that suggested in previous research), since previous research has mainly dealt with the non-positive relationship with conceptual analysis and few empirical investigations into these relationships exist.

Ⅱ. Theoretical background

2.1 CLV and CE

Researchers have studied customer value along with the concepts of CLV, CE, customer profitability, and so on (Villanueva and Hanssens 2007). Although both CLV and CE are related to customer value evaluation, there exist some differences between them. Customer lifetime value (CLV) is the future value of a current individual customer, whereas Customer Equity (CE) is the sum of the lifetime values of both current and future customers (Blattberg, Getz, and Thomas 2001; Gupta and Lehmann 2005; Rust, Lemon, and Zeithaml 2004).

Researchers employ various definitions and concepts in their studies of CLV and CE. For example, Blattberg and Deighton (1996) define CE as the gain or loss, the difference between the expected profits from customers and the expenses of managing customers. Berger and Nasr (1998) define lifetime value as a firm's gain or loss due to customer transactions and argue that it can be calculated by subtracting the expenses of customer acquisition, sales and services, and time from the total gains throughout the customer's lifetime. In this study, we follow Gupta and Lehmann (2003)'s perspective, which sees CLV as the present value of all the possible future profits from a customer. We also use the definition of CE provided by Hogan, Lehmann, Merino, and Verhoef (2002).

Customer equity (CE) recognizes customers as the primary source of current and future cash flows. Therefore, firms are interested in maximizing the net present value of current and future customers, which is considered a good proxy for the firm value (Gupta et al. 2002). Thus, CE has been regarded as powerful tools to maximize the return on marketing investments, and to guide the budget allocation (Blattberg and Deighton 1996; Rust et al. 2004; Reinartz et al. 2005).

2.2 CE and firm performance: Positive view vs. skeptical view

Previous studies have shown a high correlation between CE and a firm's financial performance. They argue that CLV and CE can be good indicators of firm value. For example, Gupta et al. (2006) proposed that marketing programs affect the acquisition, retention, and expansion of customers and subsequently influence CLV and CE and eventually firm value. The purpose of considering CLV and CE has been to ensure optimal customer selection in marketing activities and to improve the measurement of marketing effectiveness.

In addition, the existing literature on CE and profitability or firm value assumes a high correlation between them (Hogan et al. 2002; Venkatesan and Kumar 2004). Gupta, Lehmann, and Stuart (2004) empirically studied this with four online firms and one offline firm by estimating the CE (or future customer value) of each firm and explaining the relationship between the estimated CE and the stock price value of the firms. They found that it is feasible to determine CE and firm value as long as a firm can estimate its customer growth pattern and project its existing customer margin. Additional research by Kumar and Shah (2009) found a direct relationship between CLV and shareholder value. This suggests that if marketing managers can continue to run marketing campaigns to increase customer value, this will directly lead to increases in shareholder value. These studies are only a start, however. There is still a need to continually improve measures of CLV and to link CLV to financial performance.

However, marketing scholars and practitioners have questioned the positive effect of CRM. Some researchers have criticized firms that are so obsessed with yielding increasing levels of management with the objective of satisfying their customers well beyond what is economically reasonable that they have fallen into a "satisfaction trap" (Reichheld and Teal 1996). It has also been pointed out that, after putting huge amounts of money into CRM systems, some firms do not know how to manage customer relationships with this new database and have therefore achieved negative returns on investments (Rigby et al. 2002). Shugan (2005) directly points out that competition could lessen the effect of CRM. Boulding et al. (2005) have raised the question of a sustainable competitive advantage of long-term customer orientation in competition. And, marketing customization (e.g., target pricing, coupon targeting, one-to-one promotions), one of the efficient tools of CRM, could intensify competition in a competitive market (Shaffer and Zhang 1995; Shaffer and Zhang 2002). By modeling a direct CRM system, Musalem and Joshi (2009) have suggested that overly high expectations of future margins might lead to excessive competition between two firms in terms of acquiring customers. Some disagree regarding the importance of acquisition effort and retention effort in CRM. For example, Downling and Uncles (1997) warned that long-term customer transaction does not always help to increase profits and it might not help to lessen their marketing expenditures. Reinartz and Kumar (2000) empirically investigate this issue. Some research suggests that marketing activity of maintaining long-term relationship with customers might not be an optimal strategy for all firms (McGahan and Ghemawat 1994; Fruchter and Zhang 2004).

Furthermore, contrary to previous findings on CRM, firms focus more on acquiring new customers rather than maintaining current customers (Lee and Kim 2007). For example, Korean telecommunication companies have been struggling to steal customers from their competitors, and this has led to increases in marketing expenditures (Song 2009). Therefore, the Korean Government decided to limit the marketing expenditures of firms to prevent the low valuations of firms with competition (Kim 2010). In addition, Song et al. (2009) have classified CE into two types (retention equity and acquisition equity) and have suggested the possibility of a weak link between CE and profitability using the two types of equities.

To sum up, the discrepancies between these CRM studies can be summarized as follows. Debates exist in the field of marketing on whether long-term CRM and the maximization of CE, which is an efficient mediator of long-term corporate value, are superior in the long term to short-term profit maximization (Dekimpe and Hanssens 1995, 1999; Keil et al. 2001) which has been given a lot of criticism in the field of marketing.

On the one hand, some claim that a firm's long-term profit can be enhanced by maximizing CE (Villanueva and Hanssens 2007). On the other hand, others claim that this reduces the profitability of the company compared to the short-term outcome strategy due to intensive competition (Musalem and Joshi 2009; Shaffer and Zhang 1995; Shaffer and Zhang 2002; Villanueva et al. 2007). From this point of view, our work will provide initial empirical evidence for the possibility of a non-positive relationship between CE and firm profit by incorporating a firm's growth rate. Previous research on CRM has addressed the importance of firmographic factors, such as type of industry, number of employees, annual growth rate, annual revenue, number of branch offices of a firm, and indicators for multinational operations(Kumar and Shah 2009; Niraj, Gupta, and Narasimhan 2001;Venkatesan and Kumar 2004). In this study, we focus on the firm's growth rate, which incorporates a time-varying dimension into the analysis of CE initiatives. In addition, only one firm is analyzed, so growth rate is an appropriate variable to be used in this study. However, future research could investigate these predictions across industries and incorporate other variables with different kinds of datasets. In summary, our research seeks to fill an important gap in the CE literature by incorporating a time-varying dimension into the analysis of CE initiatives. We hope that this work stimulates further research that expands our knowledge and improves CRM.

Ⅲ. Model

To fulfill the purpose of the study, we propose a model to clarify the relationship between CE and firm performance (profitability).

3.1 Estimation model for CE

CE is the summation of CLV for customers at time t. We apply the expected transaction frequency using the BG/NBD model (Fader, Hardie, and Lee 2005) and average profit per transaction based on the recency, frequency, monetary (RFM) framework to estimate the CLV for each customer. We first estimate the expected transaction frequency of the customer using the BG/NBD model, which includes the recency and frequency information of the customer. Then, we estimate each customer's CLV by multiplying the expected transaction frequency by the average transaction volume.

3.2 The effect of CE on firm profitability

We develop an empirical model to estimate the effect of CE on the firm's profitability based on a distributed lagged model (see Koyck, 1954), as the Koyck model represents the long-term and carry-over characteristics of CE well. The following equations show our final empirical models.

$$\pi_t = \alpha_0 + \lambda \, \pi_{t-p} + \sum_{l=1}^{p} \beta_l \cdot CE_{t-l+1} + \varepsilon_t \quad \cdots\cdots \text{(Eq. 1)}$$

$$\pi_t = \alpha_0 + \lambda \, \pi_{t-p} + \rho \, GR_t + \sum_{l=1}^{p} \left(\beta_l \cdot CE_{t-l+1} + \delta_l \cdot GR_t \cdot CE_{t-l+1} \right) + \varepsilon_t \quad \cdots\cdots \text{(Eq. 2)}$$

In each equation, π_t denotes the firm's profit at time t, CE_t denotes the firm's CE at time t, and GR_t denotes the firm's growth rate at time t. (Eq. 1) directly examines the relationship between CE and firm profitability. (Eq. 2) investigates the moderating role of firm growth rate on the relationship between CE and firm profitability. Finally, each equation has a lag parameter, which specifies or determines the lag of the model through model fit.

Ⅳ. Data & analysis results

4.1 Data

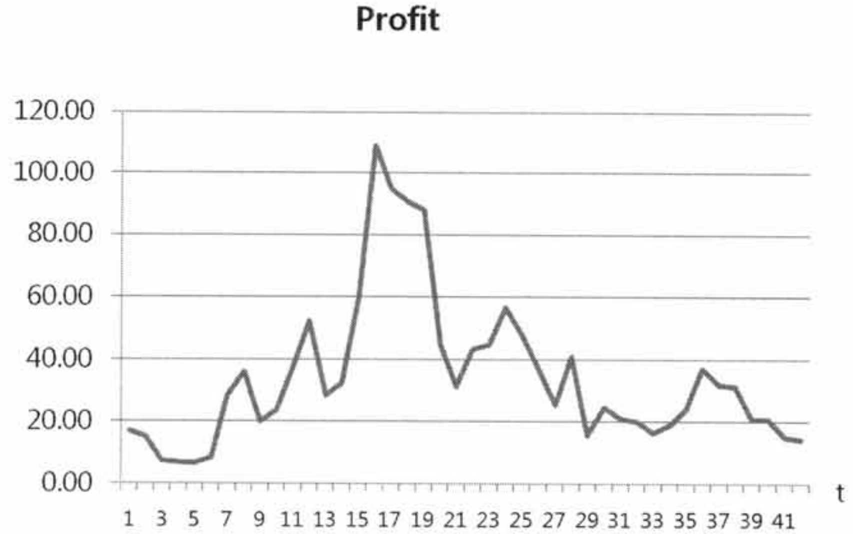
We use the transaction data of a small online shopping mall in Korea. This shopping mall mainly deals with personal care goods and electronic products for general customers. This online shopping mall is not involved with the trading of goods: rather, it is a marketplace that connects the supplier to the customer. We use data from over 100,000 transactions from 26,831 customers over 42 months. This data include the member's ID, date, time of transaction, transaction amount, and margin.

4.2 Results

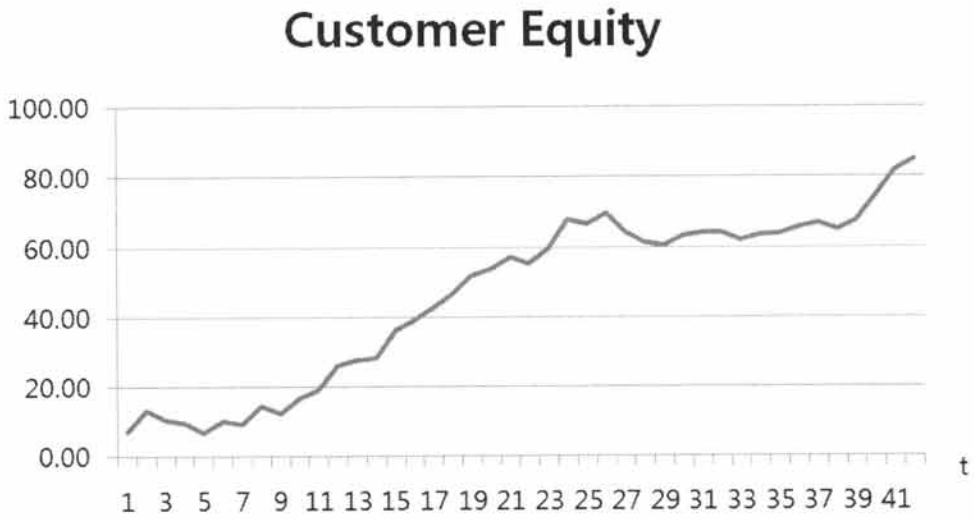
Before investigating the relationship between CE and firm profit, we verified the several model assumptions, such as stationarity, autocorrelation, and heteroskedasticity. To confirm the stationarity of data, we checked the existence of a unit root by confirming that the lagged effect is not significantly equal to 1 (Dickey and Fuller 1979). To verify autocorrelation, we utilized the Breusch - Godfrey test (Breusch 1979), which can be applied to autoregressive models. For all the models, we confirm that there are no autocorrelation among residuals. Finally, we verify the homoscedasticity of residuals for all the models by applying the Goldfeld and Quandt test (Goldfeld and Quandt 1965) and the Breusch and Pagan test (Breusch and Pagan 1979).

We first analyzed the effect of CE on the firm's profit over the whole period using ordinary least square (OLS) estimation. We determined the lag of the model (best lag = 1) by the adjusted-R^2. ⟨Figure 1⟩ shows the monthly profit of the firm over time (x-axis: months, y-axis: profit (1 million Korean Won)). ⟨Figure 2⟩ shows an estimated monthly CE over time (x-axis: months, y-axis: profit (1 million Korean won)). As can be seen in ⟨Figure 2⟩, CE increases as time passes regardless of the profit pattern shown in ⟨Figure 1⟩. Comparing the patterns of profit and CE, their non-pos-

⟨Figure 1⟩ Firm's profit over time



〈Figure 2〉 Estimated customer equity (CE) over time



itive relationship can be expected.

〈Table 1〉 shows the results of the regression analysis with three parts for the whole period, high growth period, and low growth period based on (Eq. 1). In 〈Table 1〉, the first column shows that CE does not have a significant effect on profit throughout the firm's entire lifecycle. This implies that CE does not have any impact on firm performance during most of the periods. This is not consistent with the previous findings of a positive effect of CE on profit. However, there might be a difference between CE in new market conditions in which firms are trying to acquire prospective customers and CE in saturated market conditions in which no more customers exist (Song 2010). As Kumar and Shah (2009) suggest, the effect of CE on firm profit would differ for compa-

〈Table 1〉 Comparison of Customer Equity (CE) effects

	Whole Period	High Growth Period	Low Growth Period
constant	9286708.158 (5756561.898)	-7385508.081 (9595730.443)	3990374.395 (6835718.390)
$Profit_{t-1}$	0.819*** (0.097)	0.207 (0.275)	0.677*** (0.101)
CE_t	-0.064 (0.099)	1.818 * (0.646)	0.062 (0.110)
R^2	0.636	0.762	0.647

Note: Estimated standard errors are in parentheses.
***: p 〈 0.01
**: p 〈 0.05
*: p 〈 0.10

nies with different growth rates. Moreover, as Johnson and Selnes (2004) point out, as acquiring customers is most profitable in an early market, and maintaining existing customers is most profitable in a mature market, market growth could be an important factor for managing marketing strategy. An overall growth rate for each period was obtained from the data. A median split was used to identify two growth rate levels. In other words, the period with a growth rate lower than the median (4%) growth rate of the data has been classified as the "Low Growth Period," and the period with the growth rate higher than or equal to the median (4%) growth rate of the data has been classified as the "High Growth Period". As can be seen in the second and third columns of 〈Table 1〉, the effect of CE depends on the firm's growth rate. In the case of the high growth rate period, there is a significant effect of CE and an insignificant effect of prior profit. That is, the long-term effect of CE might be higher than that of short-term profit (prior profit). On the other hand, in the case of the low growth rate period, the effect of CE is not significant, whereas the effect of prior profit is significant. That is, the effect of short-term profit maximization might be higher than that of long-term CE maximization.

We additionally analyzed the moderating effect of growth rate on the link between CE and firm profit by using a regression analysis based on (Eq. 2). 〈Table 2〉 shows the results of this additional analysis. It shows that the growth rate negatively affects the firm's profitability in this context. Finally, it confirms the interaction effect of growth rate on firm profit (β=16.98, p-value=0.001). That is, the effect of CE on profit might be higher when the growth rate is high. In the case of the high growth rate period, maximizing CE is profitable, since there are many prospective customers in the market. Conversely, in the low growth rate period, short-term profit maximization might be profitable, since there are few prospective customers in the market, and it enhances com-

〈Table 2〉 Estimates for moderating effect of growth rate (R^2: 0.732)

	β	Std. Errors	VIF[1)]
constant	4400911.585	11389227.352	
$Profit_{t-1}$	0.472 ***	0.121	2.166
CE_t	-0.306	0.183	4.745
Growth Rate	-216383078 *	123803107.308	6.334
CE_t * Growth Rate	16.98 **	4.583	4.005

[1)]Variance Inflation Factor(Kutner et al. 2004)
***: $p < 0.01$
**: $p < 0.05$
*: $p < 0.10$

petition and finally leads to the increase of firm costs in the end (Song 2010).

V. Discussion and implications

The view that firms must adopt a long-term perspective toward managing customer relationships is gaining powerful momentum in the marketplace, in practice, and in academia. Most of the theoretical approaches in the relationship marketing literature suggest that managing relationships is beneficial for the firm (Reichheld and Teal 1996). However, this long-term relationship with customers may not always be the right answer. Empirical evidence stresses the importance of moderating effects (Niraj, Gupta, and Narasimhan 2001; Reinartz and Kumar 2000). Thus, it is likely not true that customer relationship building is always vital to firms; rather, building the "right" type of relationship depending on situational factors is important. That is, firmographic factors — such as organizational design; incentive schemes; information technology resources; as well as industry, company, or customer structures — may affect the performance of customer relationship marketing activities (Reinartz et al. 2005). We have contributed to addressing the growing concerns regarding the proper management of customer relationships by examining how the concept of CLV affects firm performance in the different stages of the lifecycle of a firm. Also, paradoxically, based on the conclusions of this study, we can raise a new doubt for future research, whether the profitability or financial performance is really important and sole metric to measure the performance of CRM activities. Although the effect of CE on firm's profitability might be marginal depending on the situation, CE or CRM activities can play roles in the other area, such as risk management, competitive advantages and so on. In the future research, these possibilities can be investigated with various manners.

Customer Equity (CE) might not have a significant effect on firm profit over the entire period of the firm's existence. By dividing our data into two parts, we obtain different effects of CE. It might be concluded that maximizing CE is profitable in the early stage of a firm's life cycle, whereas in the low growth rate period, short-term profit maximization may be profitable due to the small prospective customer base in the market.

With respect to the result of our study, we limit our research sample to a small online fir m, and the results suggested that CE might not have a positive effect on firm performance over the firm's entire lifecycle. Most of the previous research on CE suggests that building relationships with customers is the most important strategy for maintaining customer relationships and increasing firm profitability (Reinartz and Kumar 2003). However, our study has warned against the inadequate implementation of CRM, as in the case of low growth rate periods, this CE - performance relationship may not be positive. As Kumar and Shah (2009) emphasize that firmographic factors (e.g., type of industry, size of employees, number of branch offices, annual revenue, annual growth) can affect CLV and CE, firms should implement different marketing strategies depending on the situational factors. It could be concluded that even though CRM is in increasing demand and firms are focusing on the customer as an asset, there might be a limited condition for this positive effect of CE, in that it may not be effective over the whole period of a firm's life cycle in SMEs. When the life cycle was divided by growth rate, CE had different effects on profit in the high growth stage and low growth stage. In the case of the former, the effect of CE on profit was positive because of the prospective customer base, whereas the effect was not significant in the latter. That is, when the business environment is saturated and firms are no longer competing in the market, managers should be cautious about implementing a CRM strategy. Our study is an initial empirical attempt to raise the possibility of a non-positive relation between CE and firm profit. Many firms spend large sums of money each year on building long-term relationships with their existing and prospective customers. Marketing managers are thus constantly faced with the problem of how to allocate a limited marketing budget across customers and competing marketing activities. This issue addresses the problem of how to efficiently allocate marketing resources to maximize the profit generated by marketing investments such as advertising, CRM, and other promotion activities. While the notion of investing in customers has frequently been supported in the literature, the crucial point we highlight is that in low growth environments, it is likely that over-investment may occur in the case of SMEs, leading to reduced profit. SMEs tend to face a range of marketing challenges, such as lack of resources, expertise, and impact (O'Dwyer et al. 2009), and they also tend to be particularly susceptible to environmental change where their external influence is limited (Carson et al. 1995; Kocak and Abimbola 2009). Therefore, in mature and declining stages, marketing managers of SMEs may be better off investing their resources in advertising or other marketing activities than building a high-cost CRM activities. To sum up, our findings suggest that marketing managers must be aware of the possibility that the lifetime value of customers may be profitable only under certain conditions.

Although this study provides empirical support for the non-positive relationship between CE and firm performance, there are several limitations. First, we assume an interdependency among RFM factors, since the previous research of Pareto/NBD and BG/NBD also assumes the interdependency of variables. In addition, we consider the tentative time t in our model, since the infinite future time is unrealistic. Moreover, we only use the customer's mean purchase to capture the tendency of each customer. Second, regarding the selection of firms, this study examined the effect of CE in SMEs. Previous literature shows that larger firms are more likely to undertake relationship-marketing activities such as loyalty programs (Verhoef and Hoekstra 1999) and that CE benefits the larger firms that have already established a competitive advantage (Leenheer et al. 2007; Liu and Yang 2009; Meyer-Waarden and Benavent 2006; Sharp and Sharp 1997). Thus, it might be useful for future studies to assess organizations of other sizes to increase the validity of our results. Third, it may be worthwhile to empirically test whether this link holds true for other kinds of firms in the emerging technology product industry that do not expect a continuous growth or have a fixed growth rate. Lastly, future research could attempt to find strategic implications by incorporating moderating variables, such as environmental factors or customer relationship type, to thoroughly investigate the effect of CE.

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