Survey analyze customer relationship management using balanced scorecard

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Abstract

Customer relationship management (CRM) has become one of the leading business strategies in the new millennium. CRM is a broad term for managing business interactions with customers. The effectiveness of CRM can be measured as a satisfaction level achieved by CRM activities. Although CRM has emerged as a major business strategy for e-commerce, little research has been conducted in evaluating the effectiveness of CRM. Because it is difficult to demonstrate tangible returns on the resources expanded to plan, develop, implement, and operate CRM, the aim of our research is to measure the intangible attributes of these benefits, such as value enhancement, effectiveness, innovation, and service improvement. In this paper, we propose a customer-oriented evaluation model for evaluating the effectiveness of CRM and then illustrate the model through a case study.

1. Introduction

Transforming enterprises to become customer-centric while still expanding revenue and profit is one of the hottest strategies in business today. This strategy is known as customer relationship management (CRM). To realize CRM success, business and IT executives should implement CRM processes and technologies and

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foster employee behavior that supports coordinated and more effective customer interactions throughout all customer channels.

The essence of CRM is to change organizations from a products-centric to customer-centric philosophy. One of the most important processes of CRM is, therefore, extracting valid, previously unknown, and comprehensible information from a large database and using it for profit. CRM deploys many technologies and decision-science applications like data mining and data warehousing to perform effectively. As enterprises pursue CRM strategies, they become aware that the costs and benefits of CRM initiatives are significant, and they strive to grasp the financial impacts and economic factors that contribute to their success. For enterprises to achieve ROI (return on investment) from CRM, investments in the application domains and technologies of CRM should contribute tangible business benefits to the enterprise, as well as intangible benefits. The effectiveness of CRM can be measured as a satisfaction level achieved by CRM activities. As CRM has emerged as a major business strategy for e-commerce, evaluating its effectiveness is very important. However, little research has been conducted to evaluate CRM effectiveness.

In the CRM world, increased emphasis is being placed on developing measures that are customer-centric and give managers a better idea of how their CRM policies and programs are working (Winer, 2001).

In this paper, we develop a model for evaluating CRM effectiveness using the balanced scorecard (BSC). BSC is intended to link short term operational control to the long-term vision and strategy of the business. In this way, a company focuses on critical key factors in meaningful target areas. By modifying the four perspectives of BSC suggested by Kaplan and Norton (1992), we can use BSC as a tool for assessing the effectiveness of various application domains (Fairchild, 2008; Grembergen & Amelinckx, 2011; Martinsons, Davison & Tse, 2006). BSC overcomes the drawbacks of financial-measure-oriented performance assessment through harmonizing both financial measures and nonfinancial measures and giving managers a balanced view of various perspectives. In evaluating the effectiveness of CRM activities, nonfinancial outcomes such as customer satisfaction, channel management, and customer understanding are as important as financial ones such as increased profit, net sales, and reduced cost. BSC, therefore, was chosen as a well-coordinated and harmonized evaluation tool for CRM effectiveness.

This paper is organized as follows: First, this paper presents the definition and potential benefits of CRM in Section 2. Section 3 covers the existing CRM evaluation models, their drawbacks, and the advantages of BSC as a CRM evaluation tool. A CRM evaluation model and a CRM evaluation framework will be developed in Sections 4 and 5. The suggested model will be illustrated through a case study in Section 6. Finally, we conclude our study with emerging issues in the area of CRM evaluation.

2. Customer relationship management

As we enter the new millennium, CRM is changing many industries and influences many customers and businesses. CRM can be defined as managerial efforts to manage business interactions with customers by combining business processes and technologies that seek to understand a company's customers.

Companies are becoming increasingly aware of the many potential benefits provided by CRM. Some potential benefits of CRM are as follows (Jutla, Craig, & Bodorik, 2001; Stone, Woodcock, & Wilson, 1996):

- Increased customer retention and loyalty
- Higher customer profitability
- Creation value for the customer
- Customization of products and services
- Lower process, higher quality products and services

3. CRM effectiveness and evaluation

Since it is difficult to evaluate tangible returns on the resources expanded to plan, develop, implement, and operate CRM, we have to measure the intangible nature of benefits such as customer loyalty, service quality, value enhancement, effectiveness of processes, innovation of operation, service improvement, competitiveness, trust, and efficiency.

The conventional financial/accounting methods of investment evaluation are currently the most widely used methods for marketing evaluation. Variants upon this theme include net present value (NPV), return on investment (ROI), and internal rate of return (IRR). These methods have the advantage of being investment evaluation settings. Their major drawback of evaluation is that they focus on the estimation of cash flows and accounting criteria. They are not suitable for evaluating investments that are expected to yield benefits that are primarily intangible, indirect, or strategic (Grembergen & Amelinckx, 2011).

Multicriteria methods may solve this problem because they account for tangibles as well as for intangible impacts. These methods include information economics, cost benefit analysis (CBA), return on management (ROM), value analysis, and investment portfolios. The major drawback of these methods is that they are necessarily based on substitutive measures of intangible costs and benefits. These methods have the difficulty in making consensus on scores (Lycett & Giaglis, 2000).

Jutla, Craig, and Bodorik (2001) suggested a method for evaluating e-CRM readiness. This research divided customer components into four perspectives. First, the framework analysis of this research labeled components with names such as engage, order, fulfill, and support in a midsize telecommunication company. This framework was developed to address a current business need to become e-CRM ready and to lessen the slope of the learning curve required to get there. Second, the framework allows us to dig deeper and identify what components and enablers must be in place to support e-CRM. Finally, the framework identifies metrics that can be used to monitor and infuse feedback to assess the e-CRM readiness of a business entity. His study, however, only focused on evaluating the CRM readiness of a company.

Stamoulis, Kanellis, and Martakos (2009) assessed the business value of e-banking distribution channels. These can be used to assess the business value along two points: the internal view, where the channel is considered as a resource whose utilization must be maximized, and the external view, where the channel as an interface to the bank's customer base should enable and support customer relationship management. These models only focused on customer interaction in the communication channel.

Morgan, Clark, and Gooner (2010) assessed marketing performance based on marketing productivity and marketing audits. His approach is limited to evaluating the marketing area, not the technology domain.

In the 1990s, Kaplan and Norton (1992) presented the BSC concept in Harvard Business Review. Their basic idea is that evaluation criteria should include not only financial measures but also other perspectives such as customer satisfaction, internal business process, and innovation and learning.

Kaplan and Norton (1996) propose a three layer structure for the aforementioned four perspectives: mission, objectives, and measures. Different market situations, product strategies, business units, and competitive environments require different scorecards to fit their mission, strategy, technology, and culture. The general BSC framework can be adapted to the more specific needs of monitoring and evaluating the e-business projects. Grembergen and Amelinckx (2011) proposed a generic e-business scorecard, which consists of four perspectives: customer orientation, business contribution, operational excellence, and future orientation. Martinsons, Davison, and Tse (2006) developed a BSC for information systems that measured and evaluated IS activities from the following perspectives: business value, user orientation, internal process, and future readiness. Fairchild (2008) addressed the problem of developing measurement models for KM metrics and examined their sustainability and soundness in assessing knowledge utilization and retention of generating

revenue. BSC pursues overall optimization through a balanced view of various perspectives and adds value by providing both relevant and balanced information in a concise way for managers.
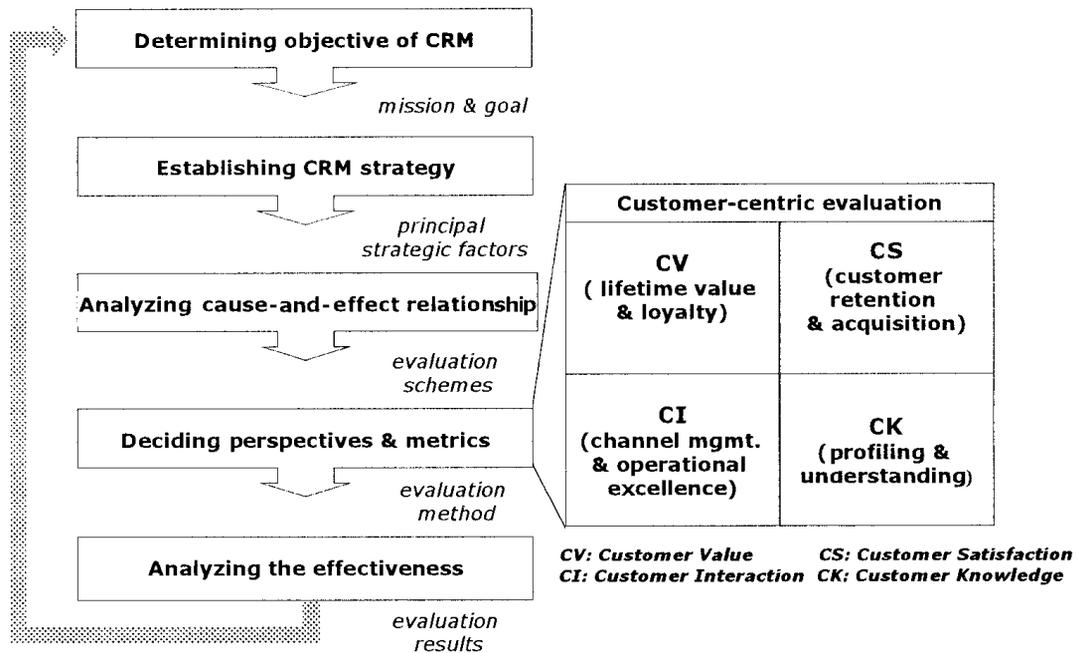

Fig. 1. CRM Evaluation Model

To evaluate the effectiveness of CRM, we need an evaluation tool, which can assess both tangible and intangible elements and overcome the drawbacks mentioned in the beginning part of Section 3. With the following advantages, BSC is considered as an excellent tool for evaluating CRM.

- BSC makes it possible to evaluate managerial activities with unbiased viewpoints by providing both tangible financial aspects and intangible, non-financial aspects (Martinsons, Davison, & Tse, 2006).
- BSC evaluates the integrated domain of business and technology (Grembergen & Amelinckx, 2011).
- BSC evaluates customer satisfaction which is very important in e-business (Grembergen & Amelinckx, 2011).
- BSC is a goal-oriented system. To evaluate CRM effectiveness in a consistent manner, a developer can consider the goals or objectives of CRM (Olve, Roy, & Wetter, 1999).
- BSC is an action-oriented system. It can monitor and improve business performance (Martinsons, Davison, & Tse, 2006).

4. A model for evaluating the effectiveness of CRM

The CRM evaluation model is an iterative process that assesses the effectiveness of CRM. As Figure 1 shows, the first step in this process is to determine the mission and goal of CRM. Once this is decided, the next step is to establish a CRM strategy. The purpose of this step is to figure out the principle strategic factors. After figuring out the strategic factors, the next step is to find interrelationships among CRM activities and business goals (business goals being increased profits). By analyzing these relationships, we can learn what

should be done to achieve better outcomes and what perspectives are important towards achieving the outcomes. The outcome of the analysis is evaluated to identify the effectiveness of CRM. This assessment gives further insights into the CRM strategy and helps the marketer to determine the strategy of CRM. The iterative process continues until the current CRM activities become effective..
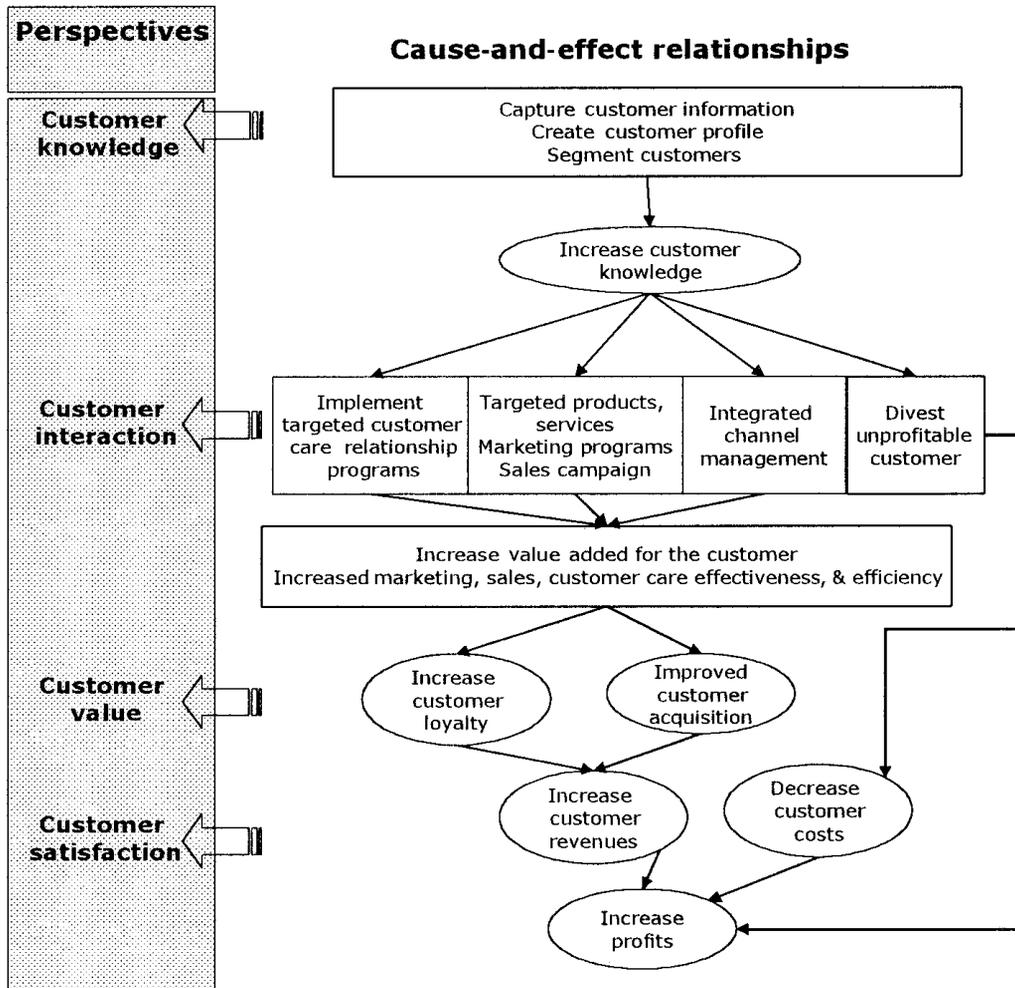

Fig. 2. Cause-and-Effect Relationships and Related Perspectives in CRM Process

Figure 2 shows the cause-and-effect relationship and related perspectives in the CRM evaluation process. First, a company accumulates a huge amount of customer information and creates a customer profile. Next, the company discovers large and hidden customer characteristics through data mining tools and techniques. As CRM has tremendous potential for collecting and storing customer preferences, CRM can make it possible to create new products and customize existing products in innovative ways.

Second, the company integrates all relevant information on each customer across the enterprise in order to facilitate more effective planning, marketing and services. Identified customer knowledge helps to find

customer needs when a company interacts with customer. As customer requirements and expectations are met, loyal customers are created. Customer value can be added by product and service customization, additional information provision, and quality enhancement. Understanding and collecting customer needs are critical to conducting these value-adding activities.

Table 1. Company-Centric BSC vs. Customer-Centric BSC

Company-Centric BSC	Focus	Customer-Centric BSC	Focus
Financial perspective	Delivering value to our shareholders	Customer value	Enhancing customer loyalty and profit
Customer perspective	Delivering value to our customer	Customer satisfaction	Achieving business value
Internal business perspective	Promoting efficiency and effectiveness in our business processes	Customer interaction	Promoting effective channels and pursuing operational excellence
Innovation and learning perspective	Sustaining our innovation and change capabilities, through continuous improvement	Customer knowledge	Understanding customer and analyzing customer information

Third, satisfactory long-term customer relationships can be established, as channels aid employees to serve customers effectively and profitably. Finally, the company increases revenues and profits. Typically, business value can be added by improving brand image, establishing customer relationships, enhancing public relations, and generating sales leads.

The cause-and-effect relationship can give a clue as to what perspectives are important to achieve business goals. Traditional BSC has four perspectives: financial, customer, internal business, innovation, and learning. As Table 1 shows, we changed the traditional four perspectives to reflect a customer-centric philosophy in CRM evaluation. The revised model consists of the following four perspectives: *customer knowledge, customer interaction, customer value, and customer satisfaction.*

The customer knowledge (CK) perspective represents the status of the customer segment and customer data management. Customer knowledge focuses on technology learning, understanding customer needs, and customer profiles, which influence ways of interacting with customers. CK is a prerequisite and essential part of meeting the future needs of customers and improving management processes. Therefore, it is critical for some organizations to familiarize themselves with the new technology to understand their customers well.

The customer interaction (CI) perspective represents operational excellence and channel management of customer services and management processes. Management and maintenance affect customer value, operational excellence, and high-quality CRM service. By managing and maintaining CRM more effectively, a company can satisfy its customers and achieve operational excellence.

The customer value (CV) perspective represents the benefits gained from customers, such as lifetime value and customer loyalty. If the customer is satisfied with the service of a company, there will be no problem concerning customer deviation. To maintain this relationship, the CV perspective continues to find ways to build customer commitment and loyalty. In addition, customers are identified by their value and are treated accordingly.

The customer satisfaction (CS) perspective represents the level of satisfaction achieved by products or services. Customer satisfaction is the feeling that a product or service meets customer expectations and determines whether the buyer will become a permanent customer or not.

5. Metrics of CRM effectiveness

We propose an application framework for evaluating CRM effectiveness. Each perspective is evaluated by appropriate metrics. There are some reasons why performance measurement is so powerful in enhancing business. First, measurement removes the ambiguity and disagreement that surround high-level strategic concepts. Second, measurement provides the precise language for clearly communicating at all levels what the organization wants to accomplish and how it intends to accomplish it. Third, measurement allows the continual evaluation of corporate alignment on strategic goals. Last, measurement not only improves the probability but also speeds the pace at which change occurs (Brewton, 2002).

5.1. Customer Knowledge

The varied tastes and preferences of customers make it difficult to classify customers into a large homogenous population to develop marketing strategies. A customer wants to be served according to his or her individual and unique needs. To analyze customer needs, CRM uses appropriate data mining tools and data warehousing techniques. We can learn about customer characteristics by analyzing customer knowledge, customer retention, customer deviation, and customer acquisition. An enterprise using its Web site as a CRM tool should incorporate Web log data, page views per day, and visits per day.

In order to adopt the current customer-centric business environment, companies use data mining and data warehousing technology. A major problem is filtering, sorting, manipulating, analyzing, and managing this data in order to extract information relevant to CRM activities. Data mining tasks are used to extract patterns from large data sets. With the shift from mass marketing to one-to-one relationship marketing, one area that can greatly benefit from data mining is the marketing function (Shaw, Subramaniam, Tan, & Welge, 2001). Technology learning is also important towards understanding customers. It is required, therefore, to assess employee skill to use customer information effectively. Security is another basic and critical prerequisite when dealing with customer information. Security, in particular, has been a serious issue concerning online purchases and an impediment to the acceptance of the e-channel. Many customers are concerned about the amount of personal information that is contained in databases and how it is being used. Customers perceive safety of transactions and seller empathy as important (Devaraj, Fan, & Kohli, 2002). Table 2 shows the metrics of customer knowledge.

5.2. Customer Interaction

Many communication channels are developed to interact with the customer effectively. To manage various communication channels efficiently, managers make an effort to monitor the business processes. The processes can be divided into internal and external processes. The *internal processes* refer to the handling of the processes in the company internally, whereas the *external processes* describe the interactions between suppliers and customers. Internal processes determine operational excellence and external processes determine channel management effectiveness. The customer relationship can be reinforced by effective customer interaction. Customer interaction has the following components (Stone, Woodcock, & Wilson, 1996).

- Contacts with company staff—front line and other
- Outbound contact management—mail, telephone, sales visits, and deliveries
- Physical service environment
- Transaction—price, value, and terms

Winer (2001) suggested a relational program that includes customer service, loyalty programs, customization, rewards programs, and community building.

To analyze customer interaction, some important measures need to be considered, such as the number of marketing campaigns, total cost for promotion, frequency of contents updates, payment, response channels, and so on. Communication channels not only include classic communication channels such as letters, fax, and telephone but also emerging new channels such as call centers, service centers, Web sites, and virtual internet communities. It is vital to manage various channels efficiently and immediately. Internal processes need to connect and integrate diverse channels effectively.

Table 2. Measures for Customer Knowledge

Objectives	Measures
Collecting appropriate customer information	Customer acquisitions (No.)
	Number of customers (No.)
Analyzing customer data	Web marketing
Acquiring new customers	Page views per day (No.)
Understanding customer needs	Visits per day (No.)
Improving skills of employee	Net sales/employee (%)
Improving CRM techniques	Technological capacity (No.)
	Frequency of hardware upgrade (No.)
	R&D investment ($)
	• Support R&D
	Data warehouse, Data mart, Data mining
	Multi-dimension analytical
	• Service R&D
	Customer segment personalization
	Recommendation
	Web service
	Customer profile research ($)
Secure service	Security level (%)

We need to analyze the business process to evaluate measures such as payment methods, delivery channels, and product diversity. Customer satisfaction can be increased by improving channel management and maximizing operational excellence. Therefore, it is necessary to analyze such information as delivery time, response time, and product diversity. Table 3 shows the metrics of customer interaction.

5.3. Customer Value

Customer value describes tangible and intangible benefits gained from CRM activities, which help to arrange the relationship with the customer successfully. Customer value can be achieved through, for example, value added by relevant information in virtual communities, a loyalty program, and an attractive bundling of different products.

In order to determine the customer value, we need to analyze such information as marketing campaign, number of retention customers, and net sales. CRM initiatives should provide mutually beneficial value to the customer and the company. Current customer profitability should be calculated, establishing a baseline and

comparing new calculations to that baseline periodically. Calculating customer value potential and using it as a guideline will be profitable in the future. Mulhern (1999) provided a conceptual and methodological foundation for measuring customer lifetime value in direct marketing for broader target marketing applications. His emphasis is placed on the precise specification of the inputs into a profitability analysis and the measures of the degree of concentration of profits among customers. Bayen, Gutsche, and Bauer (2002) has presented special models for estimating the retention duration and acquisition probability of customers—two particularly critical variables when determining customer lifetime value and customer equity. Table 4 shows the metrics of customer value.

Table 3. Measures for Customer Interaction

Objectives	Measures
Appropriate response to customer request	Marketing campaign (No.)
	Total cost for promotion ($)
	Frequency of contents update (No.)
Integration of business processes	Number of payment methods (No.)
Improving channel management	Number of response channel to customer inquiry (No.)
	Total cost for managing channel ($)
Maximizing the effectiveness and efficiency of enterprise operations	Avg. delivery time after order fulfillment (No.)
	Response time to customer inquiry (No.)
Customizing products and services	Transaction conducted by members (%)
	Product diversity
	Detailed product information
	Timeliness sales in popular product

Table 4. Measures for Customer Value

Objectives	Measures
Improving customer retention	Number of retained customers (No.)
Profits increase	Net sales ($)
	Ordinary sales ($)
	Asset/employee ($)
	Profit/employee ($)
Improving customer service and support	Channel interface
Building attractive virtual community	• Usability
	• Service Attractiveness
	• Navigation efficiency
	• Contents search
	• Consistency of site structure

5.4. Customer Satisfaction

The assessment of customer satisfaction is one of the most important stages of the implemented model. The final aim of CRM is customer satisfaction. Customer satisfaction is difficult to measure because it is hard to quantify the satisfaction level. Customer satisfaction represents a modern approach for quality in enterprises and organizations, and serves the development of a truly customer-focused management and culture. Measuring customer satisfaction offers an immediate, meaningful, and objective feedback about customer preferences and expectations (Mihelis et al., 2001).

As Figure 3 shows, a company interacts with the customer using various communication channels such as e-mail, Web sites, virtual communities, call centers, and service centers. This information needs to be integrated and analyzed in order to obtain a complete and accurate picture of the customers—their preferences, needs, complaints, and attributes that can make them life-long members of the organizational "network" of products and services (Berson, Smith, & Thearling, 2000).

Among the four perspectives, the customer satisfaction perspective is the most important because customer satisfaction is directly linked to a company's profits.
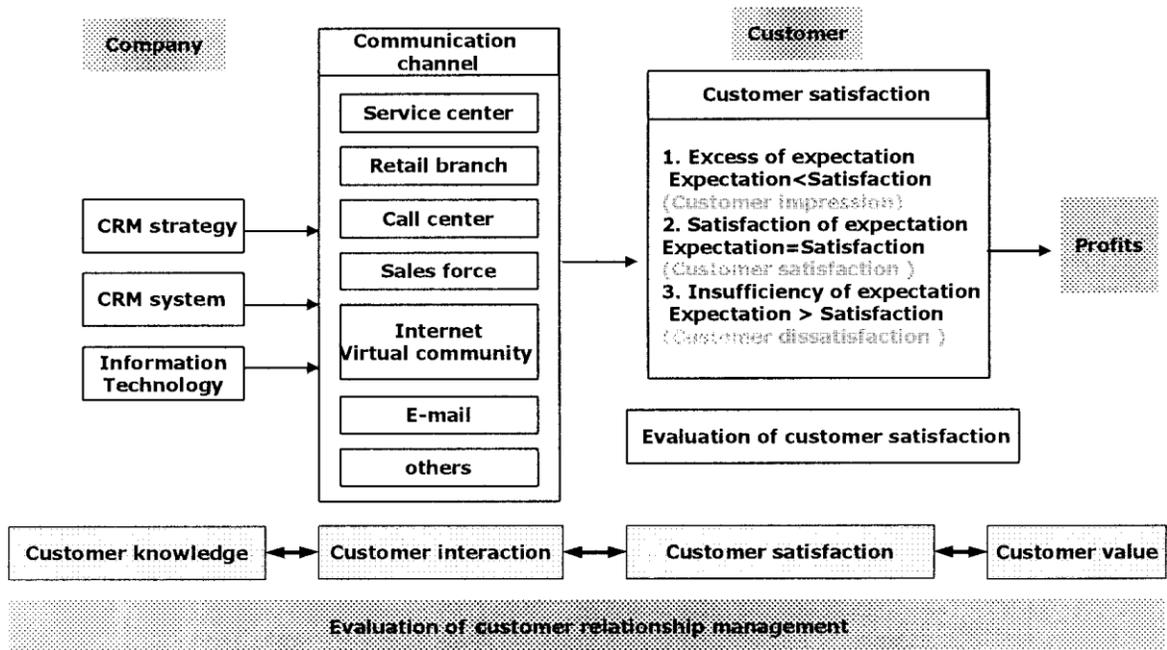

Fig. 3. The Evaluation Process of CRM

Service delivery via various channels of IT application has emerged as an important attribute in satisfying customers. In addition, it has also been reported that more than 70% of the defection of customers in the financial services sector is due to dissatisfaction with the quality of service delivered. Proper CRM practices can potentially impact customer satisfaction ratings and can potentially lead to increased customer retention (Karimi, Somers, & Gupta, 2001). Customer satisfaction was measured by questionnaires in this study. These measures include the number of customer complaints, response times, mean time to resolve issues, the number of contacts executed before achieving problem resolution, and the percentage of complaints that were successfully resolved. A customer satisfaction evaluation perspective is based on those of a SERVQUAL

instrument. This approach evaluates all activities that take place on the CRM from the following five perspectives: reliability, responsiveness, empathy, tangibles, and assurance. Table 5 shows the metrics of customer satisfaction.

Underlying the 22 items are five dimensions that Parasuraman, Zeithami, and Berry (1998) claim are used by customers when evaluating customer satisfaction regardless of the type of service. The five dimensions consider distinct components of CRM:

- *Assurance:* knowledge and courtesy of CRM employees and their ability to inspire trust and confidence.
- *Reliability:* ability to perform the promised service dependably and accurately.
- *Empathy:* caring, individualized attention the service provider gives its customers.
- *Responsiveness:* willingness to help customers and provide prompt service.
- *Tangibles:* physical facilities, equipment, and appearance of personnel.

According to Figure 3, excess, satisfaction, and insufficiency are three levels of customer satisfaction. Customer satisfaction was evaluated through questionnaires. We investigated not only customer satisfaction, but also brand image. After a company applies relationship marketing, it wants to know how much profit can be accrued from its application and a change of brand image. The intangible assets of a company such as customer satisfaction and brand image are important determinants of its market value. Bayon, Gutsche, and Bauer (2002) proposed customer equity marketing. This research suggested that a company gains shareholder value when customers were satisfied with service and brand image became strength.

Table 5. Measures for Customer Satisfaction

Objectives	Measures
Improving service quality	Brand image (%)
	Service level (%) (response to customer inquiry)
	Number of daily customer inquiries (No.)
Establishing relationships with customers	Customer satisfaction (%)
	• Assurance
	• Reliability
	• Empathy
	• Responsiveness
	• Tangibles

6. A Case Study

In this section, we illustrate how the model can be applied to a particular company that we will identify here as K Company. K Company is an online shopping mall that sells 30,000 products divided into 12 categories. K Company is ranked 18th among online shopping malls in Korea. This company was founded on September 5, 1999. Since then it has focused on Internet business and has 480 collaborating companies and annual sales amounting to $30 million. This company expanded its business area into portal services such as Internet communities, stock service, and online chatting.

Data related to each perspective was collected through expert interviews, questionnaires, and Web-log analysis. Time-related data, such as revenue, sales, cost, and site traffic, were collected for a combined period of 6 months, from February 2002 to April 2002 (period I), and from August 2002 to October 2002 (period II). The measures were selected according to the specific goals and objectives of K Company. The overall evaluation result of the company is presented in Table 6.

Table 6. The BSC Table of K Company

Metric	PI	PII	Var
a. Customer knowledge			
Customer acquisitions	2.3K	75K	226%
Number of customers	42K	132K	214%
Average page views per day	25K	50K	100%
Net sales per employee ($)	290K	350K	21%
Frequency of hardware upgrade (no./year)	1	2	100%
R&D investment ($)	21K	42K	100%
Customer profile research ($)	4K	2K	50%
Security level (firewall and SSL encryption)	high	high	—
b. Customer value			
Net sales ($)	2.3M	9.7M	322%
Ordinary sales ($)	850K	490K	142%
Assets per employee ($/person)	91K	80K	12%
Profit per employee ($/person)	34K	15K	156%
Channel Interface			
Usability	7.1	8.0	0.9
Attractiveness	6.2	7.6	1.4
Navigation efficiency	7.5	7.8	0.4
Contents search	8.6	8.4	- 0.2
Consistency of site structure	8.5	8.2	- 0.3
c. Customer interaction			
Marketing campaign frequency (no./year)	4	12	200%
Promotions cost ($/year)	2K	6K	200%
Number of payment methods	3	4	1
Number of response channels to customer inquiry	1	4	3
Cost for managing channel	2K	3K	50%
Transactions conducted by members	3%	12.1%	9.1%
Timely sales on popular products	6.1	8.0	1.9
d. Customer satisfaction			
Brand image	35%	53%	18%
Service level (response to customer inquiry)	100%	96%	- 4%
Customer satisfaction			
Assurance	6.1	8.1	2
Reliability	8.5	8.5	—
Empathy	7.3	8.2	0.9
Responsiveness	5.3	8.0	2.7
Tangibles	4.9	7.5	2.6

Some measures of each perspective were evaluated through questionnaires. A 10-point scale response format, which ranged from 1(highly dissatisfied) to 10 (highly satisfied), was used. The questionnaires were sent to 240 randomly selected customers of company K, and 52 responses were returned.

The first survey result of BSC provides some insights into the improvement area of company K's CRM. Many customers were dissatisfied with services and channel interface. In particular, the slow responsiveness and lack of response channels was a major complaint of customers. These complaints caused low revisit probability. Customer interaction that failed to support customers was evaluated as a weak point. We concluded that K Company must expand channels such as payment methods and response channels to interact more fully with its customers. Also, it was concluded that the channel interface was not attractive enough to customers. The usability and attractiveness of the channel interface was evaluated as a low point. A company has to update its Web site by taking user interface into consideration. In addition, most customers were unfamiliar with the name of the company. We concluded that its marketing campaigns did not influence customers. Finally, though K Company generated a lot of net sales over a 3-month period, February to April 2002, the percentage of purchases made by the members of K Company and the total amount of purchase made by visitors was very low. The first survey result shown in Table 6 was evaluated and discussed by the managerial board of K Company. Figure 4 shows the relative satisfaction level of four perspectives before taking appropriate action to improve CRM activities.
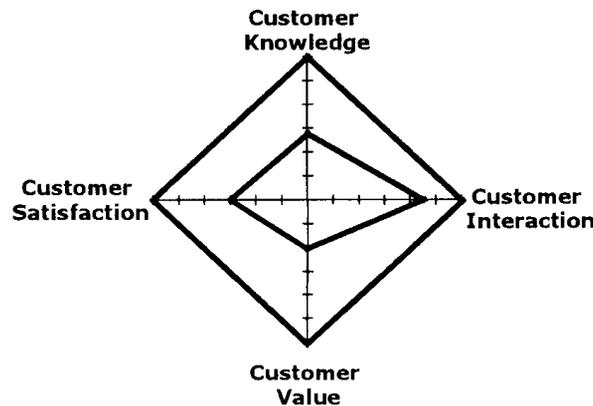

Fig. 4. Relative Satisfaction Level of the Four Perspectives (Period I)

Previously, K Company did not have a rigid tool to evaluate the effectiveness of its CRM. Therefore, it overlooked various aspects of evaluating CRM effectiveness, and it did not consider cause-and-effect relationships among various aspects. Hence, K Company could not make future plans for long-term success and could not take detailed action to achieve better performance. The evaluation model presented in this paper gives useful guidelines for K Company's CRM activities. After analyzing the BSC results, the following managerial actions were taken to improve the problems:

- *Low percentage of revisiting customers.* This was improved by improving service and making Web site content more attractive, by changing the Web site interface, and by activating the appropriate virtual communities.
- *Lack of brand image.* This was remedied by increasing marketing campaigns, by implementing various promotion programs, and increasing the frequency of promotion.

- *Low percentage of purchase made by members.* This was improved by offering customized products, by enhancing customer loyalty through discount coupons and mileage programs, and by providing a convenient transaction process.
- *Lack of interaction channel.* Expanding communication channels provided better venues for interaction.
- *Lack of timely sales in popular products.* Market research was conducted to rectify this problem.
- *Low access speed.* Increasing the hardware upgrades and reallocations improved access speed.

The "Period II" column in Table 6 shows the second survey result of BSC which reflects the effect of managerial actions. The "Var" column denotes the variance of the two results, period I and period II. Most of the metrics in period II surpass the metrics over period I significantly. Deterioration in several metrics results from the increased complexity of the new Web site. The new Web site contains more documents than the old one and causes the impediment of fast content search and inconsistency of site structure. Figure 5 denotes the relative satisfaction level of the four perspectives after taking managerial actions to improve CRM activities. All of the perspectives in Figure 5, compared with the four perspectives in Figure 4, are improved considerably. We concluded that the managerial actions are effective and the four perspectives give a practical guideline to evaluate the current CRM activities.
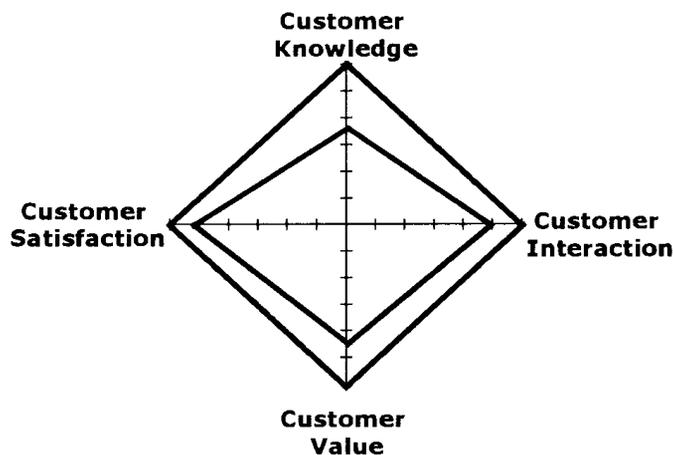

Fig. 5. Relative Satisfaction Level of the Four Perspectives (Period II)

7. Conclusion

Customer-relationship management has rapidly become one of the leading competitive business strategies in the new millennium. CRM is about managerial efforts to manage business interactions with customers.

In this paper, we investigated how to evaluate the effectiveness of CRM. In order to evaluate, we developed a model for evaluating CRM effectiveness by using BSC and presenting objectives and metrics. The CRM evaluation model is the iterative process that assesses the effectiveness of CRM. The iterative process continues until the current CRM activities turn out to be effective. This evaluation model is composed of four customer-centric perspectives: customer knowledge, customer interaction, customer value, and customer satisfaction. These four perspectives were identified by analyzing cause and effect relationships of the CRM process. Finally, the feasibility of the model was illustrated through a case study. This case study gave further insights into CRM strategy and helped managers to determine the strategy of CRM.

Notwithstanding the above findings, the study has limitations. Seasonality may affect the result of a case study. Research should accumulate more data over a long-term period to overcome the limitation.

In the future, we expect that this work will spur further research extensions of evaluating models for e-business effectiveness such as SCM, ERP, and B2B Web sites.

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