

Customer Relationship Management in Banking Sector and A Model Design for Banking Performance Enhancement

Semih Onut

Ibrahim Erdem

Yildiz Technical University

Dept. Of Industrial Engineering

Yildiz, 80750, Istanbul, Turkey

onut@yildiz.edu.tr, erdem@yildiz.edu.tr

Bora Hosver

Garanti Bank

Customer Relationship & Marketing Dept.

No :63, Maslak, 80670, Istanbul, Turkey

borah@garanti.com.tr

1. Introduction

Today, many businesses such as banks, insurance companies, and other service providers realize the importance of Customer Relationship Management (CRM) and its potential to help them acquire new customers, retain existing ones and maximize their lifetime value. At this point, close relationship with customers will require a strong coordination between IT and marketing departments to provide a long-term retention of selected customers. This paper deals with the role of Customer Relationship Management in banking sector and the need for Customer Relationship Management to increase customer value by using some analytical methods in CRM applications.

CRM is a sound business strategy to identify the bank's most profitable customers and prospects, and devotes time and attention to expanding account relationships with

those customers through individualized marketing, repricing, discretionary decision making, and customized service-all delivered through the various sales channels that the bank uses. Under this case study, a campaign management in a bank is conducted using data mining tasks such as dependency analysis, cluster profile analysis, concept description, deviation detection, and data visualization. Crucial business decisions with this campaign are made by extracting valid, previously unknown and ultimately comprehensible and actionable knowledge from large databases. The model developed here answers what the different customer segments are, who more likely to respond to a given offer is, which customers are the bank likely to lose, who most likely to default on credit cards is, what the risk associated with this loan applicant is. Finally, a cluster profile analysis is used for revealing the distinct characteristics of each cluster, and for modeling product propensity, which should be implemented in order to increase the sales.

2. Customer Relationship Management

In literature, many definitions were given to describe CRM. The main difference among these definitions is technological and relationship aspects of CRM. Some authors from marketing background emphasize technological side of CRM while the others considers IT perspective of CRM. From marketing aspect, CRM is defined by [Couldwell 1998] as “.. a combination of business process and technology that seeks to understand a company’s customers from the perspective of who they are, what they do, and what they are like”. Technological definition of CRM was given as “.. the market place of the future is undergoing a technology-driven metamorphosis” [Peppers and Rogers 1995]. Consequently, IT and marketing departments must work closely to implement CRM efficiently. Meanwhile, implementation of CRM in banking sector was considered by [Mihelis et al. 2001]. They focused on the evaluation of the critical satisfaction dimensions and the determination of customer groups with distinctive preferences and expectations in the private bank sector. The methodological approach is based on the principles of multi-criteria modeling and preference disaggregation modeling used for data analysis and interpretation. [Yli-Renko et al. 2001] have focused on the management of the exchange relationships and the implications of such management for the performance and development of technology-based firms and their customers. Specifically the customer relationships of new technology-based firms has been studied. [Cook and Hababou, 2001] was interested in total sales activities, both volume-related and non-volume related. They also developed a modification of the standard data envelope analysis (DEA) structure using goal programming concepts that yields both a sales and service measures. [Beckett-Camarata et al. 1998] have noted that managing relationships with their customers (especially with employees, channel partners and strategic alliance partners) was critical to the firm’s long-term success. It was also emphasized that customer relationship management based on social exchange and equity significantly assists the firm in developing collaborative, cooperative and profitable long-term relationships. [Yuan and Chang 2001] have presented a mixed-initiative synthesized learning approach for better understanding of customers and the provision of clues for improving customer relationships based on different sources of web customer data.

They have also hierarchically segmented data sources into clusters, automatically labeled the features of the clusters, discovered the characteristics of normal, defected and possibly defected clusters of customers, and provided clues for gaining customer retention. [Peppers 2000] has also presented a framework, which is based on incorporating e-business activities, channel management, relationship management and back-office/front-office integration within a customer centric strategy. He has developed four concepts, namely Enterprise, Channel management, Relationships and Management of the total enterprise, in the context of a CRM initiative. [Ryals and Knox 2001] have identified the three main issues that can enable the development of Customer Relationship Management in the service sector; the organizational issues of culture and communication, management metrics and cross-functional integration- especially between marketing and information technology.

3. CRM Objectives in Banking Sector

The idea of CRM is that it helps businesses use technology and human resources gain insight into the behavior of customers and the value of those customers. If it works as hoped, a business can: provide better customer service, make call centers more efficient, cross sell products more effectively, help sales staff close deals faster, simplify marketing and sales processes, discover new customers, and increase customer revenues. It doesn't happen by simply buying software and installing it. For CRM to be truly effective, an organization must first decide what kind of customer information it is looking for and it must decide what it intends to do with that information. For example, many financial institutions keep track of customers' life stages in order to market appropriate banking products like mortgages or IRAs to them at the right time to fit their needs. Next, the organization must look into all of the different ways information about customers comes into a business, where and how this data is stored and how it is currently used. One company, for instance, may interact with customers in a myriad of different ways including mail campaigns, Web sites, brick-and-mortar stores, call centers, mobile sales force staff and marketing and advertising efforts. Solid CRM systems link up each of these points. This collected data flows between operational systems (like sales and inventory systems) and analytical systems that can help sort through these records for patterns. Company analysts can then comb through the data to obtain a holistic view of each customer and pinpoint areas where better services are needed. In CRM projects, following data should be collected to run process engine: 1) Responses to campaigns, 2) Shipping and fulfillment dates, 3) Sales and purchase data, 4) Account information, 5) Web registration data, 6) Service and support records, 7) Demographic data, 8) Web sales data.

4. A Model Design for CRM At Garanti Bank

Garanti Bank, one of the leading banks in Turkey were looking at new ways to enhance its customer potential and service quality. Electronic means of banking have proved a success in acquiring new customer groups until the end of 2001. After then,

a strategic decision was made to re-engineer their core business process in order to enhance the bank's performance by developing strategic lines. Strategic lines were given in order to meet the needs of large Turkish and multinational corporate customers, to expand commercial banking business, to focus expansion in retail banking and small business banking, to use different delivery channels while growing, and to enhance operating efficiency through investments in technology and human resources

To support this strategy Garanti Bank has implemented a number of projects since 1992 regarding branch organization, processes and information systems. The administration burden in the branches has been greatly reduced and centralized as much as possible in order to leave a larger room to marketing and sales. The BPR projects have been followed by rationalizing and modernizing the operational systems and subsequently by the introduction of innovative channels: internet banking, call center and self-servicing. In parallel, usage of technology for internal communication: intranet, e-mail, workflow and management reporting have become widespread.

4.1.CRM Development

To be prepared to the changing economic conditions and, in particular, to a rapidly decreasing inflation rate scenario Garanti Bank has started timely to focus on developing a customer relationship management (CRM) system. The total number of customers is presently around two millions, but an increase to roughly three millions is foreseen as mergings with Osmanli Bank and Kofertzbank are achieved and the present growth targets are reached.

The importance for the bank of managing the relationships with their customers has been the drive of the joint projects that have been developed with IBM in the last three years. During the projects a number of crucial technological and architecture choices have been made to implement the entire process. Realizing the importance of customer information availability the first of these projects has focussed on the problem of routinely collecting and cleansing data. The project has been undertaken by the bank with the spirit that has characterized the whole CRM development. The project has promoted a massive involvement of the branches, namely of the portfolio managers and campaigns have been launched for popularizing among branch staff the importance of gathering and maintaining reliable customer data. Another set of methods have been tested for customer not included in portfolios (pool customers), such as mailing or distributing questionnaires in the branches or using automatic teller machines (ATM) and the call center. Methods for data checking and testing have been developed to be routinely employed by the bank's staff. Results obtained are very good: for portfolio customers data available are respectively 98% for the commercial ones and 85% for the retail ones. For pool customers availability goes down to 65%: this is a well-known phenomenon due to the loose relationship with the latter customers.

4.2. Data Warehouse and Data Mining

The Data warehouse is the core of any decision support system and hence of the CRM. In implementing its Data Warehouse Garanti Bank has selected an incremental approach, where the development of information systems is integrated with the business strategy. Instead of developing a complete design of a corporate Data Warehouse before implementing it, the bank has decided to develop a portion of the Data Warehouse to be used for customer relationship management and for the production of accurate and consistent management reports. Here we are not concerned with the latter goal, but are concentrating on the former.

The Data Warehouse has been designed according to the IBM BDW (Banking Data Warehouse) model, that has been developed as a consequence of the collaboration between IBM and many banking customers. The model is currently being used by 400 banks worldwide. The Garanti Bank Data Warehouse is regularly populated both from operational systems and from intermediate sources obtained by partial preprocessing of the same raw data.

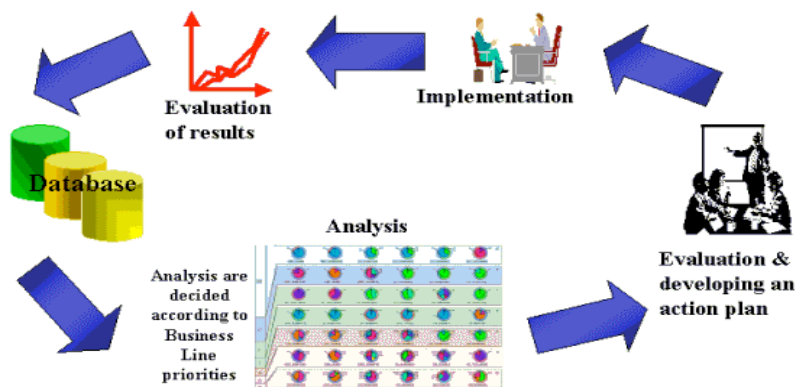


Figure 1. The process of Relational Marketing

It includes customers' demographic data, product ownership data and transaction data or, more generally product usage data as well as risk and profitability data. Most data are monthly averages and today's historical depth is 36 months starting from 1/1/1999 to 12/31/2001. As new data are produced they are placed temporarily in an intermediate, from which they are preprocessed and transferred to the warehouse. The importance of the Data Warehouse stems from the analysis of Figure 1. As a result of strategic decisions customer analysis is carried out by using data continuously updated as well the analytical methods and tools to be described later on. The CRM group analyzes results obtained and designs action plans, such as campaigns, promotions, special marketing initiatives, etc. Plans developed are then implemented by means of the several channels used by the bank to reach customers. Evaluation or results completes the cycle. The results become an integral part of the description of the bank-customer relationship in the warehouse. The learning cycle is thus complete and results obtained can be reused in future analyses and in future marketing plans. It

is easy to understand that the Data Warehouse cannot actually be built 'once for all' but is a kind of living structure continuously enriched and updated as the Relational Marketing activity develops. OLAP (On Line Application Programming) analyses are developed by means of Business Object in its web version. CRM analysts use this tool to issue complex SQL queries on the Data Warehouse or on the Analytical Datamart and carry out mono and bivariate statistics on the whole customers' population or on selected groups. Figure 2 shows general structure of Relational Marketing Activity.

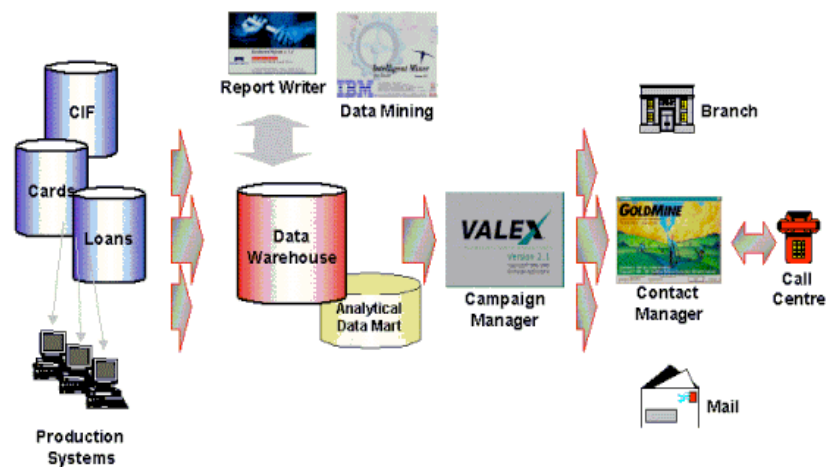


Figure 2. The Relational Marketing process is supported by a computing infrastructure where many software packages are integrated with the bank's information system.

Data Mining analyses are not carried out directly on the Data Warehouse, but on the Analytical Datamart by means of the software package IBM Intelligent Miner [Cabena et.al. 1999], using as a computing and data server the same mainframe where the Data Warehouse resides. Garanti Bank believes these tools and methodologies are a powerful competitive weapon and is investing heavily in the human resources needed to develop these analyses.

The Analytical Datamart is derived from the Data Warehouse through the following steps: 1) *Raw data processing*: data selection, data extraction, and data verification and rectification 2) *Data modelling and variable preprocessing*: variable selection, new variable creation, variable statistics, variable discretization. The above processing, based on traditional data analysis, is strictly dependent on the investigated process; new variable creation, for instance, is intended to aggregate information contained in the raw data into more expressive variables. A simple example is the number of credit transaction on current account, that contains much of the information contained in the individual transactions, but is easier to analyze and represent. Variable discretization, based on the distribution of the original variables, is intended to generate categorical variables that better express the *physical reality* of

the problem under investigation. The Analytical Datamart is customer centric and contains the following data:

1. demographic (age, sex, cultural level, marital status, etc.)
2. ownership of bank's product/services
3. product/services usage (balance, transactions, etc.)
4. global variables : profit, cost, risk, assets, liabilities
5. relationship with the bank: segment, portfolio, etc.

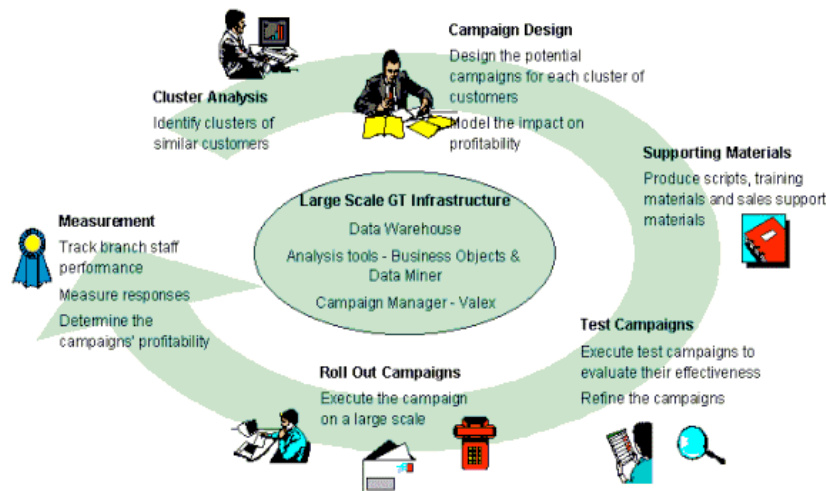


Figure 3. The marketing campaign process and the software supporting it.

4.3. Marketing Campaigns

After analyzing strategic and analytical CRM we concentrate here on the equally important operational aspects. Marketing Campaigns is the first method that Garanti Bank has used to test the above described analyses and techniques. The overall campaign process is reported in Figure 3, that shows that propensity determination and targeting are the first step of the whole activity.

A number of experimental campaigns have been designed and carried out to test the soundness of the approach before attempting a large scale roll-out. Experimental campaigns have addressed about 900 customers selected within six branch offices in Istanbul. An education process has been started by meeting sales forces in the branch offices, by distribution of an explanation booklet and by publishing on the Intranet a note explaining the whole process.

System interfaces have been modified in order to track the customers under promotion, as well as to enable salespeople in the branch office to complete the sales on promoted customers as well as to record the fact that the sale was a consequence of the promotion. The bank has so far used for promotion two channels: the salespeople in the branches and the call center. Each channel was used in four different campaigns.

RETAIL	CHANNEL	SALES (%)
1 st Mutual Fund Campaign with 4 branches	BRANCH	26
2 nd Mutual Fund Campaign with 6 branches	BRANCH	44
Credit Card Campaign with 4 branches	BRANCH	61
E.L.M.A Campaign with Gayrettepe branch	BRANCH	47
Mutual Fund Campaign with 6 branches	TELE-MARKETING	6
Home Insurance Campaign	TELE-MARKETING	21
COMMERCIAL		
Alternative Delivery Channels	TELE-MARKETING	22
Internet Branch Activation Campaign	TELE-MARKETING	67

Figure 4. Summary table of experimental promotions deployed by Garanti Bank.

The activity of the call center was supported by the Goldmine software package, while the overall campaign management was achieved through Valex. This product used customer data stored in the Data Warehouse and at the same time manages itself a smaller local database, where campaign data are temporarily stored (list of customers, date of promotion, responses, etc.). These data must be *copied* manually into the Data Warehouse when the campaign has been completed.

Table in Figure 4 reports a summary of the campaigns deployed and the results thereof. By considering that the maximum response rate obtained by campaigns run by using traditional methods is normally around 1-2%, we see that the benefit of using targeted campaigns is very remarkable. As precise measurements on results obtained by the bank by using traditional methods are not available, we cannot accurately quantify the improvement. An indirect measurement of this improvement comes from the observation that in the timeframe where investment funds campaign were run, the branch offices included in the promotion record an increase in product purchase of about 214%, against an average 6% throughout the Bank.

Table in Figure 4 shows also that the results obtained by using the call center as a promotion channel are equally satisfactory, with the single exception of a low result obtained on the first campaign on investment funds.

5. Conclusions

Results obtained by extensive usage of customer data to develop and apply Relational Marketing have convinced the Garanti Bank to proceed along the line undertaken. As lists of customers eligible for four very important banking product/services are available, as above described, the following actions are now being deployed:

1. extension of promotions to a larger customer population by having sales people in the branches contacting progressively 15,000 customers
2. targeted campaigns through Internet and the call center for customers actively using one or both of these innovative channels for their banking operations.

The same approach is now being extended to small and medium businesses and to commercial customers. Moreover the analytical and strategic CRM cycle is being completed by developing an application analyzing customers' attrition and deploying strategies to reduce it.

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