APPENDIX A: RESEARCH RESULTS OF COMPANY A

A.1 Company Background

Company A is the most experienced and largest integrated telecommunication operator in Taiwan. Originally Company A was a government organization, and it completed its corporatization in July 1996. Company A provides a full range of telecommunication services, including fixed line services, mobile phone services, and Internet access and data communication services. Taking the advantages of its solid foundation, Company A strengthens its core capability to expand the synergy of telecommunication and Internet services through strategic alliances and cooperation. Company A strives to be the perfect aide of daily life and best partners of business at the rise of mobile life and broadband communication.

A.2 CRM Implementation

The CRM implementation of Company A has covered the three components of CRM IT infrastructure – communicational, execution, and intelligent CRMs (summarized in Table A-1).

Table A-1. CRM IT Implementation of Company A

Communicational CRM	Execution CRM	Intelligent CRM
• Branch offices supporting systems • Call center • e-counter • Mobile counter	• Billing systems • Customer transaction processing system	• Data warehouse • Data mart • OLAP • Data mining

Execution CRM primarily contains a billing system and a customer transaction processing system. The billing system is the earliest automation of Company A (about forty years ago). At that time, it supported the billing processes of local phone services. In 1980s, Company A started to implement the systems supporting customer transaction processes, such as applying for local phone services or modifying the services applied. Subsequently each business of Company A has its own billing system and customer transaction processing system. In addition, Company A also has a campaign management system, but Company A doesn't use the system now because the system can't support marketing processes effectively and immediately.

With respect to communicational CRM, Company A has three customer interaction channels - branch offices, call centers, and e-counter:

Branch offices – Company A has many branch offices providing face to face counter service to customers. Before Company A's corporatization in 1996, the branch offices set up different counters for different business or services. For example, applying for fixed line services was at one counter, but applying for mobile phone services was at another counter. Each business of Company A was supported by different customer transaction processing systems. Because the

non-integrated counter service was inefficient and wasted labor power and equipment, after the corporatization, Company A started to integrate the counter service. At the first stage, Company A integrated the portal of different customer transaction processing systems, and therefore offered a one stop shopping service to customers. At the second stage, the processes of all business were standardized and the function of different customer transaction processing systems was integrated. Because the integrated system supporting the counter service is web-based, Company A could use a notebook or other mobile devices to provide the mobile counter service to customers anywhere.

Call center - In early days, call center was distributed to different branch offices. Afterward the first centralized call center was established for mobile phone business. In 2003, the distributed call centers of fixed line services were integrated into three regional call centers (northern, central, and southern Taiwan) providing integrated call center services for all business of Company A. Although company A has different kinds of call centers, including regional call centers and call centers for different products, and each of them is implemented by different business groups, the headquarters plans the overall hardware and software architecture for all call centers. Therefore, the different call centers have similar hardware and software architecture, and then it is easier to link different call centers to provide better services to customers.

E-counter – E-counter was launched in 1999. Customers could do self-service on Internet, such as billing inquiry, changing the rate plan, internet payment, and inquiring the progress of the services applied for, etc.

Furthermore, Company A is executing service quality improvement plans. The purpose is to continuously improve the service quality of customer interaction channels. In branch offices, Company A differentiates the treatment to customers according to customers' value, services customers with complete data, and continuously improves the service performance. In call center, Company A strives to make the improvements in customer opinion transmission and processing, service performance, and information integration.

Regarding intelligent CRM, the project of DW was started in 1998, and the DW was implemented in 1999. The DW solution of Company A is NCR Teradata. Company A has built up the scale of the DW from data of mobile phone services to fixed line services and data communication services. The headquarters plans and manages the DW. It is a shared IT service which provides a platform for mobile and other business groups to do the data analysis and decision making. Company A also has established the data mart and uses OLAP and data mining tools.

Because the focus of case studies in this research is on mobile telecom industry, the following research results are based on mobile telecom services of Company A.

A.3 Integration of CRM Technology Elements

A.3.1 Integration Between Communicational CRM and Execution CRM

With regard to integration of all customer data from communicational CRM and execution CRM to provide integrated and real-time support to front-end customer interactions, customer transaction data has been well integrated, but non-transactional customer interaction data has not been fully captured and integrated from different customer contacting channels of Company A. All the customer transaction data of mobile services is stored in a transaction database which could be accessed by all front-end interaction channels. When the call center modifies customer transaction data, shops will immediately see the change. However, the non-transactional customer interaction data from all channels is not well integrated. For example, the interaction records of a customer in the call center can't be seen from shops. With respect to capturing and storing customer interaction data, the interaction data such as customer requests, complaints, and questions has been captured and stored in the call center database, but the interaction data of shops is not completely captured. Besides, the data such as web click stream and the telephone keypad behavior during the interaction with call center is not stored. Company A doesn't integrate non-transactional interaction data of different channels because it is difficult. There are different kinds of interaction data with different data types, furthermore, Company A provides various telecom services, and the integration should be considered in an overall view.

The information on customer requirements, requests, suggestions and complaints is accessible by the operational departments. The front-end interaction channels gather the customer feedback, and the back-end operational departments utilize the feedbacks to improve value-generation processes. Company A considers that this cycle is very important. However, because of privacy issues the customer information only can be seen by needed operational departments.

Besides, there is a customer opinion processing system which records the opinions from internal or external channels, assigns them to appropriate back-end operational departments, and tracks the follow-up processes. Operational departments must accomplish the processing of customer opinions within a specified time. That is an indicator of performance measurement, and Company A pays much attention to it.

A.3.2 Integration Between Execution CRM and Intelligent CRM

The data sources of the data warehouse include customer service, call records, billing data, and product data, etc. The incomplete part of the data in data warehouse may be the product data, value-added services especially, because the data about the usage of value-added services is more complicated, and the data sources are the various content providers. The DW doesn't contain all customer historical data, and only the data needed for analysis will be fed into the DW. Because Company A has a huge amount of customer historical data, the data is selectively fed into the DW.

The marketing department of mobile business group considers that the DW could fulfill the main requirements of analysis, but the data sources of the data warehouse still have to be strengthened. At present, the main data source of the data warehouse is billing data. However, billing data is more appropriate for generating bills than for customer behavior analysis. There should be more extensive data sources in DW in order to analyze the customer behavior better. Presently the data sources of the DW are planned by the department of information management under the headquarters. The department of information management indicated that the data sources of the DW could be adjusted according to users' demand. However, the marketing department doesn't request the data sources they want.

In mobile business group, intelligent CRM supports the decision-making processes of the following divisions - marketing division, product division, corporate customer division, and call center. The planning and design processes of marketing campaigns and promotion activities in marketing division are greatly depend on intelligent CRM. The data warehouse supports generic applications such as reporting, queries, OLAP, and data mining. The analysis and predicting models include customer value evaluation, credit model, churn model, up-sell/cross-sell model, and psychographic segmentation. Each customer gets a score from each analysis model, and the scores will be applied in various CRM activities.

Regarding integrating analysis tools with operational systems, marketing division can use OLAP tools to do the customer behavior analysis and review the marketing campaign results. Besides, call center has its own personnel and systems to access the DW and make the analysis. Product division also can do the analysis by themselves. The operational departments can also get the analysis results through the help of IT departmet. Because marketing division's requirement of analysis is urgent, they often performs the analysis by themselves.

However, the data in the DW are business secrets and involve customer privacy so there are some limitations on data access. Every department has authorized employees who can access the DW, and other employees can get the help from these employees or request the headquarters' IT department to provide the analysis result.

A.3.3 Integration Between Intelligent CRM and Communicational CRM

The customer interaction data of the call center is well organized and fed into the data warehouse, but the customer interaction data about marketing campaigns or event marketing fed into the data warehouse is less. Besides, the customer opinions, especially complaints and suggestions, gathered by front-end customer interaction channels are also fed into the data warehouse. The customer interaction data stored in the operational database is not fed into the data warehouse in full. Only the data which is needed for analysis is fed into the data warehouse.

Regarding the support from intelligent CRM to front-end interaction channels, intelligent CRM is not heavily used for supporting the front-end. It could be divided to three parts: planning effective

customer interaction, supporting decisions on customer services, and improving the service quality and productivity of communicational CRM.

In planning effective customer interaction, the support from DW is not much. When the marketing division wants to execute marketing campaigns, they will send the name list of target customers generated from the DW to front-end channels for contacting customers. However, when a customer comes to the shop or phones the call center, the systems supporting these interaction channels can not automatically show the appropriate products for cross-selling and up-selling to the customer.

In supporting decisions on customer services, through the service quality improvement plans, in shops or the call center, Company A differentiates treatment to customers according to customers' value analyzed from the DW. For example, in shops, VIP customers are given precedence over other customers and are served in the VIP room.

In improving the service quality and productivity of communicational CRM, Company A has some methods. In shops, the system makes the analysis about the time of servicing a customer, customer waiting time, the amount of customers coming to the shop, the amount of customers served by a counter, and so on. The administrator checks these indicators and makes the needed improvement. In the call center, the customer service division analyzes service performances, such as the amount of customers served, the amount of each kind of complaints, and the time of processing customer complaints. The headquarters can see these performance data from management information systems of the call center. The customer service division often makes the analysis from the operational database so the performance analysis is not necessarily through the DW.

A.4 Organizational Alignment

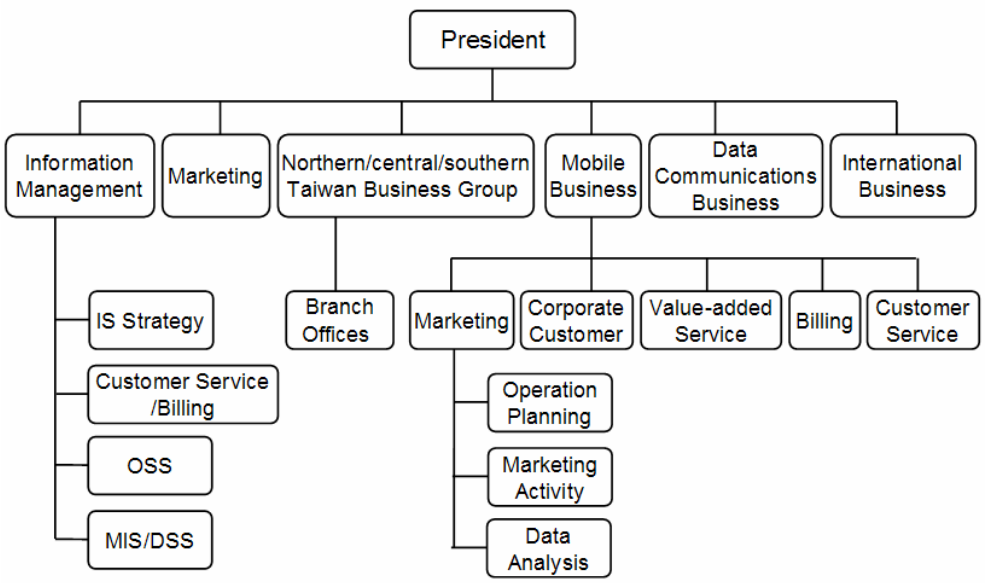
A.4.1 Structure

The organizational functions supporting CRM operation of Company A are depicted in Figure A-1. Company A provides many telecommunication services so the company is divided into "channel groups" and "product groups". Three "channel groups" (northern, central, and southern Taiwan business group) are responsible for fixed line services. Branches of the "channel groups" are also distribution channels for all telecommunication services including fixed line, mobile, and Internet services. "Product groups" include mobile business group, data communications business group, and international business group. Each of them has their own product development and marketing divisions. The information management department is belong to the headquarters and is responsible for overall planning and strategies of information systems. It provides shared IT services to all product groups which don't have their own IT department. In mobile business group, marketing division is responsible for the design of marketing and promotion activities, the analysis of product and customers through the DW, and the design of rate plans.

From the beginning, Company A designed the organization according to products and functions. There is some adjustment now. Company A establishes the corporate customer division which is responsible for enterprises customers. It is the only organizational design according to customer groups. Company A doesn't design the organization according to customer groups entirely, and its method is flexibly organizing different teams to accomplished the task for different customer groups. For example, customers are divided to different segments according to their contribution, and the design and execution of campaigns for each segment are accomplished by different teams.

Because Company A has many telecom services managed by different business groups, customers may receive disintegrated services, such as redundant service calls. In mobile business group, although there are some control mechanisms, the redundant calls to customers still could not be avoided completely. Company A is planning to centralize out-bound call activities to the call center instead of different branch offices so the frequency of marketing activities can be traced, and the redundant marketing calls can be avoided.

Figure A-1. The Organizational Functions Supporting CRM Operation of Company A



Regarding employees' accountability and job descriptions for CRM activities, Company A clearly promotes the CRM concept to employees, defines the responsibilities of different divisions, and gives the training to employees. In addition, there is a customer service information website, and representatives of the call center and branch offices could access all the business and marketing information and get the needed help from this website.

In regard to performance measures of Company A, there are many customer-oriented performance indicators. For example, customer satisfaction is one of the performance measures of marketing division; the time of processing customer complaints, the amount of each kind of

complaints, and the rate of successful in-bound calls are performance indicators of call center; time of servicing a customer, and waiting time are performance indicators of branch offices; billing accuracy is an KPI of billing division. Company A especially emphasizes the efficiency of handling customer complaints. There is a customer opinion processing system which records customer opinions from all channels, assigns them to appropriate operational departments, and tracks follow-up processes. Operational departments must accomplish the processing of opinions within a specified time. It is an indicator of performance measurement, and Company A pays much attention to it.

With respect to reward and compensation systems, at present, Company A does not formulate compensation policies which encourage customer-oriented behaviors. Company A considers that the results of employees' engaging in CRM activities or customer-oriented behaviors are the increase of revenue or the increase of the number of subscribers. Therefore, Company A only differentiates the reward to employees according to the performance of the overall operation.

A.4.2 Processes

Some of the sales and marketing processes are aligned with CRM.

At customer acquisition stage, Company A still uses the mass marketing strategy to acquire new customers rather than targeting high value prospects. With regard to referral process, Company A has a strategy of "marketing by the whole employees". The large base of employees is a strong team of market arms. The head office has developed many packages to bind the mobile service with other telecom services and to use the philosophy "everybody attracts ten" to expand the market.

At customer relationship maintenance stage, Company A assesses the value of customers, presents different offers to customers based on their value, performs customer loyalty or retention programs, and implements cross-selling and up-selling. Regarding customer evaluation, customer value is assessed mainly based on two aspects: money and the term of contract. For different purposes or demands of marketing, customer value is assessed based on different criteria. Company A presents different offers to customers based on their value. For example, Company A offers mobile phones to customers with different prices according to customer value. Besides, for high-value or loyal customers, there are some customer retention programs, such as contract renewal programs. Regarding recovery management, there is no formalized process to reestablish relationships with churn customers. Call center representatives sometimes may ask customers the reasons, but this is not a formalized process. Company A considers that making churn customers come back is not a priority because it is very difficult, and there are too many other important things should be done.

Other aligned value chain processes include dynamic R&D, cross-functional product design, integrated billing, and consistent customer service through the service life cycle. Product research

and development process is designed to collect external market information and internal customer information, and the information is used as major input for product design. Product design process conducts cross-departmental planning and proactively shares information with other departments, such as value-added service division, billing division, customer service division, and marketing division. Regarding the billing process, customers can apply for convergent bill according to their requirements. In the respect of customer service process, it is designed to systematically record, trace, and solve the customer problems through cooperation of different departments. There is a customer opinion processing system which records customers' opinions from all channels, assigns them to appropriate operational departments, and tracks the follow-up processes.

A.4.3 Culture

With regard to market intelligence generation, the telecom laboratories belonging to the headquarters and the product division of each business group are responsible for gathering domestic and overseas market information. Product and marketing divisions request telecom laboratories to conduct customer surveys every year in order to understand what products or services customers will need in the future. Besides, an annual customer satisfaction survey is conducted by a third party company for Company A every year.

In the respect of market intelligence dissemination, the cross-functional data sharing and organization-wide communication in Company A are well. Company A holds interdepartmental, cross-field, and organization-wide conference every year, such as product and marketing conference, and customer service conference, to discuss market trends and developments. In mobile business group, the frequency of cross-functional meetings is higher, even at any time. Customer satisfaction data is disseminated to all levels in Company A and all departments will do self-criticism and make improvements.

Regarding market intelligence responsiveness, Company A periodically reviews the product development efforts to ensure that they are in line with what customers want. Besides, the different departments are well coordinated to modify a product or service according to customers' suggestions and solve the problems encountered by customers. In mobile business group, the executive vice president holds a cross-functional meeting every week. The issues which need the coordination between different departments will be well handled.

A.4.4 Capability

Under the competitive environment of the mobile telecom industry, the top management of the mobile business group considers that directing the team with a customer-centric value proposition and strategy is requisite. The top management clearly explains the concept of CRM to employees and explicitly indicates how to do it and which parts are important. The executive vice president of mobile business group transmits his ideas or strategies about CRM to different divisions

through the weekly meeting. Through frequent communications, the executive vice president could lead, control, and coordinate every division effectively and efficiently and follow the customer-centric value proposition.

A.5 Market Performance

Based on the interviews with Company A, B, C, and an industry expert, the important performance measures in mobile telecom industry include market share of total mobile subscribers, market share of total revenue of mobile service, ARPU (Average Revenue Per User), and churn rate. Market share of total mobile subscribers and market share of total revenue of mobile service are two indicators reflect the market position of a company compared to others. ARPU represents the contribution of customers to the company, and churn rate reveals the customer retention capability of a company. These indicators correspond to market performance mentioned by Homburg and Pflesser (2000). Market performance is the effectiveness of an organization's marketing activities and is measured by items pertaining to achieving customer satisfaction, providing value to customers, retaining customers, and attaining the desired market share (Homburg and Pflesser, 2000). Therefore, in this research, the value generated from the CRM infrastructure of the mobile telecom companies is measured by market performance which includes the four indicators mentioned before.

Each case's market performance will be represented in the research results of each case. The market performance of Company A is presented in Table A-2. The ranking of Company A in market share of total mobile subscribers and total revenue of mobile service is first. With respect to churn rate, Company A also performs well. However, Company A has a continuous decrease in ARPU.

Finally, based on the interview results and the market performance data of Company A, the score of each construct is depicted in Table A-3.

Table A-2. The Market Performance of Company A

		2003	2004	2005
Total mobile subscribers	Ranking	1	1	1
	Market share	33%	38.1%	39.6%
Total revenue of mobile service	Ranking	1	1	1
	Market share	34.7%	35.4%	35.1%
ARPU	Ranking	1	2	3
	ARPU (NT$)	698	710	742
Churn rate (Monthly)	Ranking	--	1	1
	Churn rate	--	1.96%	1.4%

Source: Annual report, Operational status data released by Company A, the Directorate General of Telecommunications (DGT)

Table A-3. The Research Result of Company A

Constructs	Score	Consolidated Score
Integration among CRM Technology Elements		
Communicational ←→ Execution	4.07	4.04
Execution ←→ Intelligent	4.17	
Intelligent ←→ Communicational	3.88	
Alignment of Organizational Elements of CRM		
Structure	3.11	3.81
Processes	4.02	
Culture	4.21	
Capability	3.9	
CRM Value - Market Performance		
Market share (Mobile subscribers)	4.2	4.1
Market share (Revenue of mobile service)	3.8	
Customer contribution (ARPU)	3.9	
Customer Retention (Churn rate)	4.5	

APPENDIX B: RESEARCH RESULTS OF COMPANY B

B.1 Company Background

Company B is a telecom service provider which was founded in 1997. It obtained a nationwide GSM 1800 network operating license in 1997 and formally launched its mobile communication service in January 1998. Company B acquired a southern Taiwan regional mobile operator in 2001 and a central Taiwan regional mobile operator in 2004. After the acquisition, Company B became the largest private mobile operator at that time. Major businesses of Company B include mobile voice and value-added services, GPRS, 3G services, enterprise solutions, handsets and accessories, and international roaming services. According to the central idea – caring for customer wholeheartedly, Company B has always strived to provide the most satisfied products and services to its customers since its inception. At present, Company B is one of the major three telecom service providers in Taiwan.

B.2 CRM Implementation

There are two categories of IT implementation in telecom industry - BSS (Business Supporting System) and OSS (Operational Supporting System). OSS contains the systems which support the operation of telecom services, such as base station, mobile switching center, and network equipment. BSS supports the running of business, and CRM belongs to the range of BSS. Company B has implemented the three components of the CRM IT infrastructure – communicational, execution, and intelligent CRMs (summarized in Table B-1). The course of CRM implementation is explained as follows.

Table B-1. CRM IT Implementation of Company B

Communicational CRM	Execution CRM	Intelligent CRM
• Call center (IVR, CTI) • Direct shops/franchise shops supporting systems • Internet shop & customer service center	• Billing system • CM (customer management) system • CRM campaign platform	• Data warehouse • Data mart • OLAP • Data mining

When Company B formally launched its mobile communication service in 1998, it had implemented the needed BSS supporting the running of business. Billing system is the core of the BSS and must be established beforehand. It could be categorized as execution CRM. The systems supporting the front-end customer interaction channels such as shops and call center were also established at this time. With regard to direct shops or franchise shops, CM (customer management) system supports the customer transaction processes, such as applying for a new mobile number or contract renewal. Billing system is also used in front-end shops to support the bill payment processes. Other systems supporting the front-end shops include POS (point of sale)

system, bill printing system, electronic queuing system, etc. Regarding the call center, Company B established its call center when its mobile communication service was launched. The typical systems include IVR (Interactive Voice Response) and CTI (computer telephony integration). Through the automatic services of IVR, the call center could save the cost of serving every caller by representatives. When the call is transferd to call center representatives, CTI will display the detailed information of the caller, and the representative could provide the correct and complete services to the customer immediately. In addition, Internet customer service center was launched in July 2000. Customers could do self-service through the website, such as billing inquiry, changing the rate plan, and inquiring the status of the services applied for, etc. In November 2005, Company B launched its Internet shop. Customers can apply for mobile phone numbers or buy a new mobile phone through Internet. Company B is the first mobile telecom company providing Internet shopping services.

The implementation of Company B's CRM infrastructure at the initial stage focuses on core systems of execution CRM and communicational CRM. The aim of these systems is to provide the basic functions supporting the running of business, such as keeping the data of customers, generating bills, creating the channel to provide customer services, and the implementation does not consider the function of analysis. After launching the mobile communication service for one year, about six year ago, Company B started to implement the data warehouse because the number of subscribers had increased to some degree and the data about customers had accumulated a lot and was enough for analysis. The data warehouse solution adopted by Company B is NCR Teradata. One year after the implementation of DW, Company B begun to established some subject data marts and OLAP cubes. Three years after the implementation of DW, the complicated data mining analysis model could be generated. Besides IT, intelligent CRM needs the clear understanding of the business side. Business departments help IT to make the specification of data fed into the DW, make sure the use of data is appropriate, and propose the direction of analysis and modeling.

Probably in 2003, Company B begun a CRM project, and the purpose was to construct an integrated CRM platform. Through the implementation of CRM campaign platform, it could link the back-end intelligent CRM and front-end interactive CRM and make the CRM campaign processes become more automatic and integrated. The marketing division only has to design and plan marketing campaigns on CRM campaign platform, and the marketing campaigns will be scheduled automatically by the platform. On the execution day of the marketing campaign, the name lists will be automatically generated and forwarded to front-end systems of the call center or shops to carry out the marketing campaign. During the execution, the responses of customers will be recorded by front-end systems and fed back to the DW for the analysis and assessment of the campaign result. Company B believes that this integrated CRM platform could reform past semi-automation CRM campaign operation procedures, improve marketing efficiency, make the management and control of campaigns more perfect, and most important of all enable marketers

to efficiently carry out dynamic and exquisite marketing activities (like event-based marketing). The integrated CRM platform was launched in 2005. Marketers are still trying to use this CRM platform so this system has not been fully utilized yet.

B.3 Integration of CRM Technology Elements

B.3.1 Integration Between Communicational CRM and Execution CRM

With regard to integration of all customer data from communicational CRM and execution CRM to provide integrated and real-time support to front-end customer interactions, customer transaction data have been well integrated but non-transactional customer interaction data has not been fully captured and integrated from different customer contacting channels of Company B. About the integration of transaction data, IVR and CTI used in the call center have already linked with the databases of backend systems, such as the billing system, value-added service systems, and CRM campaign platform, etc., so the call center could get needed transaction data support when serving customers. However, these customer transaction data are selectively provided to front-end personnel. Because of security issues front-end employees can not see complete customer transaction data and only can see the transaction data they need. Regarding the non-transactional customer interaction data, customer contacting channels only capture and store basic and important customer interaction data, such as the number of times a customer make a call to the call center, and reasons of inbound calls, etc. In shops it is more difficult to capture the customer interaction data because the interaction is more complicated. Company B considers that not all the customer interactions should be captured in systems.

Besides, the operational departments of Company B can make use of some mechanisms, whether organizational or technological, to interact with the call center and utilize the infromation from customers to improve value-generation processes or provide needed support to the front-end. The mechanisms include daily reports fed back from the call center, regularly cross-functional coordination and discussion of critical issues reflected from the call center, and the system which recorded and assigned the problems can't be solved by the call center to back-end operational departments to take care and trace the follow-up processes. In addition, the customer opnions from internal and external channels, such as the call center, e-mail, the mailbox, and the Directorate General of Telecommunications (DGT), are gathered and used for improving the value-generation processes.

In addition, marketing campaigns are delivered by different front-end channels so there must be a smooth link between the CRM campaign platform and front-end channels. There are two categories of channels: agent channel – people-to-people contact, and non-agent channel – through some media, such as DM, short messages, and E-mail, etc. The integration between CRM campaign platform and systems of agent channel has been done but is still not very good.

Therefore, the campaigns running on the CRM campaign platform are mainly delivered by non-agent channels. Company B will enhance the integration continuously.

B.3.2 Integration Between Execution CRM and Intelligent CRM

Company B has established a customer-centric DW integrating operational data sources. The data fed into the DW include four categories: basic data about customers, call records, billing behavior, and contact behavior. Because new systems are appearing constantly, the marketing department proposes the data needed for analysis, and the IT department will plan to load new data sources to the DW based on marketing's analysis requirements. The data useless for analysis will not be loaded to the DW. Because data sources of the DW change with time, it is difficult to say that the DW has completely integrated operational data sources, but Company B considers that the transaction and behavior data integrated to the DW are already not bad.

The data warehouse supports generic applications like reporting, queries, online analytical processing (OLAP), and data mining as well as specific applications, such as campaign management, churn analysis, propensity scoring, and credit level analysis. In addition, there are a variety of models in intelligent CRM, and every model is for one kind of customer segmentation. A customer may belong to one customer segment in general, but for different purposes of marketing, the customer may belong to different customer segments divided by different dimensions. Company B considers that data modeling must be driven by business thinking and then the model will be useful for the front-end.

Intelligent CRM mainly supports the analysis and design processes of marketing campaigns, in addition, product research and development, customer services improvement, and revenue assurance are other processes which need the support of intelligent CRM.

Regarding integrating analysis tools with operational systems, users can use BI (business intelligent) tools to access the analysis results of the DW. If users can not get the needed analysis results through BI tools, the IT department will do the DW analysis based on user requirements and provide the analysis result to uses. Besides, Company B also trains project managers of marketing to use BO (business object), which is a tool of OLAP, consequently the project managers of marketing are able to access and analyze the DW.

B.3.3 Integration Between Intelligent CRM and Communicational CRM

The data of contact behavior from communicational CRM, such as selling products through outbound calls, customer responses to marketing campaigns, and customer complaints from inbound calls, are fed into the DW. Regarding data sources, the data from shops are not very complete, but the data from the call center are better.

The analysis of customer data supports decision making on planning effective customer interaction. The customer retention division analyzes customer data to find out potential

customers of marketing campaigns and to plan the way of interaction with customers. Front-end employees executes marketing campaigns according to name lists and guidelines generated from the analysis, but they could not see the raw data about customers.

In the respect of organizational support from intelligent CRM to communicational CRM for planning the way of interaction with customers, Company B considers that all Taiwan telecom companies do this well. The difference between Company B and others is only in the respect of system integration of intelligent CRM and communicational CRM, and Company B thinks that it is better than others. With CRM campaign platform, Company B achieves full-automatic campaign data exchange - the name list of target customers is automatically generated and sent to the front-end, and customer responses to campaigns are automatically fed into the DW. Other companies may use a semi-automatic way, for example, offering the name list to the front-end by FTP (File Transfer Protocol). Therefore, Company B has greater capacity of conducting marketing activities.

The analysis of customer data is also fed back to communicational CRM to support decisions on customer services, but Company B thinks they only accomplished the basic one at present and there are still a lot could be improve. Now when a customer phones the call center, the call center can know the mobile phone number of the caller and find out the data about the customer. According to different degrees of customer contribution to Company B, customers will be served by different service representatives. In addition, the analysis of customer data is also used for improving the service quality of communicational CRM. For example, the call center analyzes the response time of inbound calls and finds out problems frequently reflected by customers to improve service quality. The reasons of customer inbound calls are fed into the DW. Company B then analyzes the reasons, classifies them, and traces their evolution. Company B could focus on the problems that trigger customer calls to improve customer satisfaction.

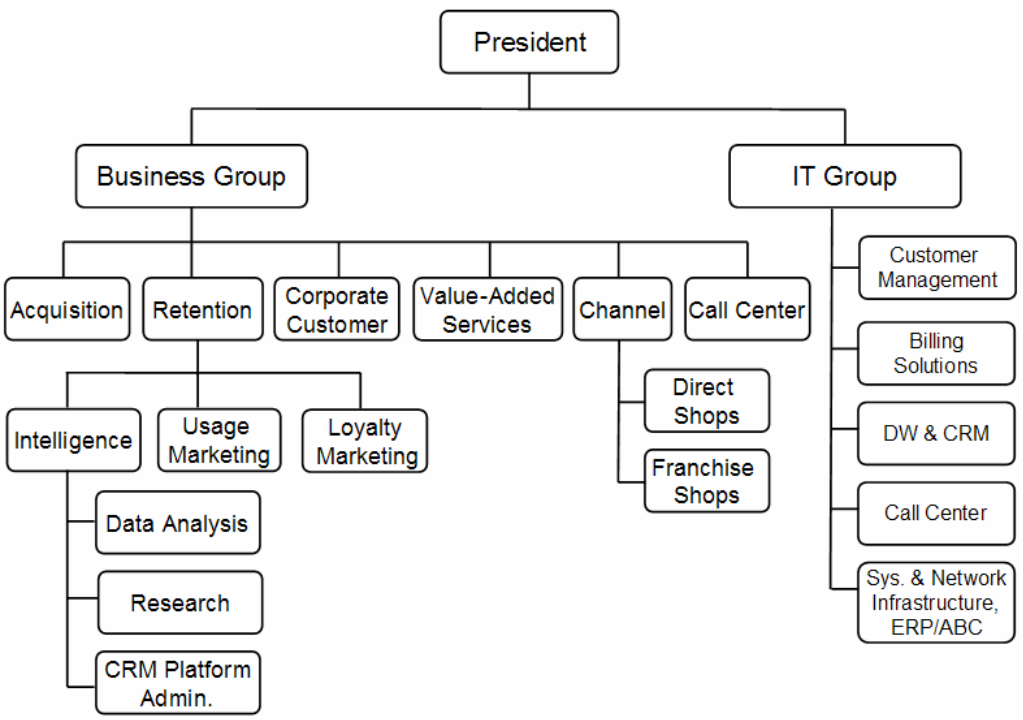
B.4 Organizational Alignment

B.4.1 Structure

The organizational functions supporting CRM operation of Company B are depicted in Figure B-1. In business group, Company B established the customer acquisition division and the customer retention division. The customer retention division generates intelligence about customers by data analysis and market research and uses the intelligence to do usage marketing and loyalty marketing. Employees are organized around important CRM processes to realize the goal of increasing customer contribution and retaining customers. Because of the change of top management thinking and the evolution of organization structure, Company B considers that they must centralize the processing of marketing from the angle of customer life cycle so customers will not get disintegrated marketing interactions from Company B.

In addition, in the respect of designing organizational functions according to customer groups, Company B only establishes the corporate customer division which is responsible for enterprise customers. Company B considers that dividing the organization according to customer segments is not very realistic because there are different kinds of customer segmentation, and if dividing the organization like this, the different teams will do the overlapping things. Therefore, the compromising method of Company B is to plan usage marketing and loyalty marketing with the view of customer segmentation, but they doesn't divide the organization according to customer segments.

Figure B-1. The Organizational Functions Supporting CRM Operation of Company B



Company B considers that the difficulty of CRM is to do a lot of detailed things right to achieve the goal. In order to execute CRM correctly and effectively, Company B defines employee responsibilities and roles for carrying out CRM and enforces management polilcies and mechanisms of CRM. For example, the role of CRM platform leaders is to be a champion of CRM and a power user of CRM platform and to lead the entire company to execute CRM better. In addition, Company B regularly delivers some training to marketing PMs to coach them for correctly utilizing the CRM platform. One of the responsibilities of the CRM platform administration team is to ensure that the design of marketing campaigns is based on relationship marketing thinking rather than mass marketing.

Regarding performance measures, in Company B, the product division co-owns the performance measures of the retention division, such as the revenue of content services, because the great performance of revenue reflects that the product division designs products well. By this Company

B could encourage the product division to develop products satisfy customer needs. At the corporate level, the key performance indicators of Company B still are mainly based on sales, operational performance, and revenue, etc. There are some customer-centric performance indicators, but these indicators are relatively fewer. Company B is considering to adopt more customer-centric performance measures, such as balance score card, to facilitate customer orientation. In addition, the reward and compensation system at present still does not focus on encouraging customer-oriented behaviors, and the management is pondering to make some adjustment.

B.4.2 Processes

Company B implements many processes relevant to CRM. In customer acquisition, Company B still uses the way of mass marketing because the market in Taiwan is too small, and using the targeting strategy can't get enough customers. Nevertheless, in the customer relationship maintenance stage, Company B utilizes the customer information produced by the CRM system to evaluate customers, such as customer segmentation, and doing the customer data analysis to find out the potential customers of marketing campaigns. In addition, Company B also carries out the processes of loyalty marketing and usage marketing. Loyalty marketing includes contract renewal - targeting high-value customers and providing customers with the products of different levels, loyalty programs - offering benefits or distinguishing services to VIP customers, and anti-turn - detaining customers who want to leave. Usage marketing focuses on two parts – voice and data. Voice usage is difficult to enhance so Company B puts emphasis on raising customer usage of value-added services. Besides, in the respect of relationship maintenance, Company B is trying to manage the entire customer life cycle by tracking customer relationship status of the entire life cycle and taking care of customers according to the relationship status. Besides, through event-base marketing executed on the integrated CRM platform, except approaching the right customers, Company B can contact them at the right time. Finally, regarding the customer referral process, Company B runs some MGM (member get member) programs occasionally rather than continuously. In the respect of recovery management, Company B does not do this because Company B thinks that making churn customers come back is very difficult.

Other aligned value chain processes include research and development processes, product design processes, billing processes, and customer service processes. Regarding product research and development processes, market and customer information are collected through data analysis and market research, and different departments work together to justify the concept of products. In regard to product design processes, cross-departmental planning and information sharing exist. The product division is usually the project manager and has to lead the project and coordinate with other departments, such as designing the new products or services, communicating with the billing department, discussing with retention division on how to promote, and telling front-end channels how to sell the products. Regarding billing processes, Company B provides the

convergent bill which integrates bill information of all consumption relevant to one customer. Regarding customer service processes, they are designed to systematically respond, trace, and solve customer problems through cross-functional cooperation. There is a system which records and assigns the problems which can't be solved by call center representatives to back-end operational departments to take care and trace the follow-up processes. In addition, operational departments regularly have discussions on critical issues reflected from the call center and provide needed support to front-end interaction channels.

B.4.3 Culture

In market intelligence generation, Company B has an intelligence division which is divided into three departments: data analysis, research, and CRM platform administration. The data analysis department helps Company B to understand customers from their behavior. The research department makes a lot of market surveys or buys primary and secondary reports to understand customers from their opinions. The CRM platform administration department supports the entire marketing campaign process and accumulates a lot of intelligence of relationship marketing.

With regard to market intelligence dissemination, Company B has interdepartmental meetings frequently to discuss market trends and has formal and informal cross-functional communication, such as sending short messages, to share the information about customers or competitors within a short period. Regarding customer satisfaction information, it is not linked with daily operations or performance measures so not all employees of Company B receive the information.

Regarding market intelligence responsiveness, the information on customer requirements, suggestions, and complaints is delivered to operational departments, and the business group drives the cross-functional coordination to make improvements according to customer needs.

B.4.4 Capability

The capability of directing the company with customer-centric value proposition may be not very good in the past, but Company B has quite strong intention to become more customer-centric at present. In past three years, because of the issues of NP (number portability) and integration between Company B and the acquired companies, CRM was not the priority of Company B. At present, Company B has controlled these issues and can put more resources on CRM. The branding and competitive strategies become more customer-centric now. Besides, the market of mobile telecom industry in Taiwan has become mature and all telecom companies consider that customer retention and raising customer contribution have become very important. The atmosphere of the market and the top management's consciousness of CRM drive Company B's endeavors to implement CRM.

The president of Company B is very supportive to CRM, including budget and people, although he is not involved in execution. The major diving force of CRM is hold by the director of the

customer retention division, and she is the leader of the execution of CRM. She is very enthusiastic about CRM and leads the team to solve a lot of problems encountered when implementing CRM. She considered that if a CRM leader only treats CRM as a short-term project and just wants to finish it, the implementation of CRM will not generate great benefits to the company. The CRM team leader's attitude, including enthusiasm, energy, and belief, to CRM is the most critical success factor of CRM.

B.5 Market Performance

The market performance of Company B is presented in Table B-2. The ARPU of Company B has continuously increased. Besides, Company B makes the churn rate drop to 2.82% which is acceptable according to the international standard (2.5%~3%).

Finally, based on the interview results and the market performance data of Company B, the score of each construct is depicted in Table B-3.

Table B-2. The Market Performance of Company B

		2003	2004	2005
Total mobile subscribers	Ranking	2	2	3
	Market share	31.9%	31.8%	30%
Total revenue of mobile service	Ranking	2	3	3
	Market share	30.6%	30.7%	30.8%
ARPU	Ranking	3	3	2
	ARPU (NT$)	582	693	776
Churn rate (Monthly)	Ranking	--	3	2
	Churn rate	--	4.75%	2.82%

Source: Annual report, Operational status data released by Company B, the Directorate General of Telecommunications (DGT)

Note: The market performance data contains the two companies merged by Company B.

Table B-3. The Research Result of Company B

Constructs	Score	Consolidated Score
Integration among CRM Technology Elements		
Communicational ←→ Execution	4.23	4.17
Execution ←→ Intelligent	4.3	
Intelligent ←→ Communicational	3.98	
Alignment of Organizational Elements of CRM		
Structure	3.6	4.04
Processes	4.1	
Culture	4.32	
Capability	4.15	
CRM Value - Market Performance		
Market Share (Mobile subscribers)	3.8	4.05
Market Share (Revenue of mobile service)	4	
Customer contribution (ARPU)	4.3	
Customer Retention (Churn rate)	4.1	

APPENDIX C: RESEARCH RESULTS OF COMPANY C

C.1 Company Background

In 1997, Company C was established and was awarded two wireless service licenses (GSM 900 and GSM 1800). It launched its GSM services in January 1998 to provide high-quality mobile communication services in Taiwan. Products and services of Company C include mobile voice services (Post-Paid and Pre-Paid), value-added services, 3G services, enterprise solutions providing total solutions for corporate communications, and selling handsets and accessories. Company C is the first to offer Taiwan consumers numerous value-added services such as mobile banking, m-commerce, real-time access to financial, entertainment and headline news, and mobile mail. Besides, Company C is the market leader in pre-paid mobile communication services. In order to expand economic scale and strengthen the competition advantage, Company C merged a telecommunication company which providing GSM1800 service islandwide in January 2004. Company C follows the core values of "innovative, trustworthy and responsive" and strives to achieve the vision of "Anytime, Anywhere Communications, Enriching People's Lives" through various high-quality products and services.

C.2 CRM Implementation

The CRM implementation of Company C contains CTI, e-CRM, campaign management system, and data warehouse, etc., and these systems can be corresponded to three components of the CRM IT infrastructure (depicted in Table C1).

Table C-1. CRM IT Implementation of Company C

Communicational CRM	Execution CRM	Intelligent CRM
• Call center (IVR, CTI) • Shops supporting systems • e-CRM	• Billing system • Customer transaction processing system • Campaign management system	• Data warehouse • Data mart • OLAP • Data mining

When Company C launched its service, the call center was build up to service customers. There are two important systems supporting the operation of the call center – IVR and CTI. With these two systems, call center can service customers more efficiently, and the integrated information of customers could provide immediate and complete support to call center representatives to increase the service quality and satisfaction.

E-CRM supports the customer interaction through Internet, which includes altering customer data, inquiring billing data, and making calculations of rate plan, etc.

Campaign management system could generate name lists of out-bound calls and assist managing marketing campaigns. Through the automation of marketing campaigns processes, Company C can substantially save the time of running marketing campaigns, from one month to a few days.

After Company C launched its service in January 1998, in order to effectively manage customer data and intensify CRM, Company C adopted the data warehouse solution of NCR Teradata in June 1998. Company C made the earliest DW implementation in Taiwan telecom industry. Through the building of data marts and the using of data mining and OLAP tools, Company C can better utilize the intelligent CRM to support relevant CRM activities.

The whole view of CRM in Company C is to use the DW as a customer information platform combined with operational support platform and customer interaction platform to form a solid and integrated CRM architecture. The goal is through the integration of operational data and customer interaction data, and transforming the data to intelligence, to construct the base of business intelligence and further improve the relationship with customers.

C.3 Integration of CRM Technology Elements

C.3.1 Integration Between Communicational CRM and Execution CRM

Company C has established a CTI system which integrates customer data from communicational CRM and execution CRM to provide real-time support to front-end customer interactions. Through the CTI system, call center representatives can see the integrated data about customers, such as basic customer data, transaction data, questions inquired before, call center interaction records, and satisfaction data of callers, etc. Call center representatives also can query the needed data from back-end systems, such as billing system, and sales and marketing system, to gain the needed support. If customer problems can't be solved by call center representatives, the problems will be transfered to back-end supporting teams to deal with.

Company C considers that their integration of customer transaction data is very good, and an important issue they emphasize is data security. Data security issue, especially in privacy, is a major concern of Company C and its data access control is relatively strict.

Besides, the information on customer requirements, requests, suggestions and complaints is accessible by operational departments so Company C could utilize the infromation from customers to improve value-generation processes.

C.3.2 Integration Between Execution CRM and Intelligent CRM

The data sources of the data warehouse include customer basic data, call records, billing data, and call center interaction data. Call records and billing data are main data sources of the DW, but call center interaction data is minor. Different types of data come from different systems, such as billing system, call center CTI system, etc. Company C considers that the data fed into the DW is

complete because compared with other industry, the data sources of DW in telecom industry are simpler, and Company C is relatively a new company which has no legacy systems when implementing the DW.

The DW supports general applications such as reporting, queries, OLAP, and data mining, as well as specific applications such as campaign management, customer segmentation, churn analysis, propensity scoring, and customer profile description.

The DW and relevant analysis support value chain processes, such as marketing, sales, services, and product development processes, etc. In marketing, Company C could effectively design and manage marketing campaigns, identify the right products or services for cross-selling and up-selling, and develop appropriate strategies to handle customers who are likely to churn. In product development processes, through analyzing the demands of different customer lifestyle, Company C could design rate plans or value-added services which satisfy customers better.

Regarding integrating analysis tools with operational systems, marketing people can not direct access the detailed raw data and do the analysis by themselves because of security issues. The way of doing the analysis is like that users propose requests, and the IT department will generate the analysis result to them. There are several approval processes, and not everyone proposing the request can get the analysis result.

C.3.3 Integration Between Intelligent CRM and Communicational CRM

The data about the call center interaction with customers is one of the data sources of the data warehouse although it is minor compared with other operational data sources.

The analysis of customer data is fed back to front-end customer contact points to support decisions on customer interactions. For instance, when a customer phones the call center, the mobile phone number of the caller will be sent to the back-end, and the data in DW relevant to the caller will be find out, such as the classification of the voice usage amount of the customer (heavy, medium, or low), to support the front-end interaction with the caller. Besides, when executing a promotion activity or a marketing campaign, the front-end customer contact channels will get the needed support from the back-end analysis. When call center representatives making outbound calls of marketing campaigns or executing cross-selling when receiving an inbound call, the system of the call center will give them the needed information support, such as which products is appropriate for cross-selling to a specific customer. Maybe it is not so automatic, but in front-end customer facing channels, no matter the call center or retail stores, they will get enough training and needed help and know how to promote the right products to the right customers at the right time.

Besides, the analysis of customer data is well used for improving the service quality of communicational CRM. For instance, Company C makes the following analysis in order to improve the service quality: the contacting channel propensity of customers, the questions

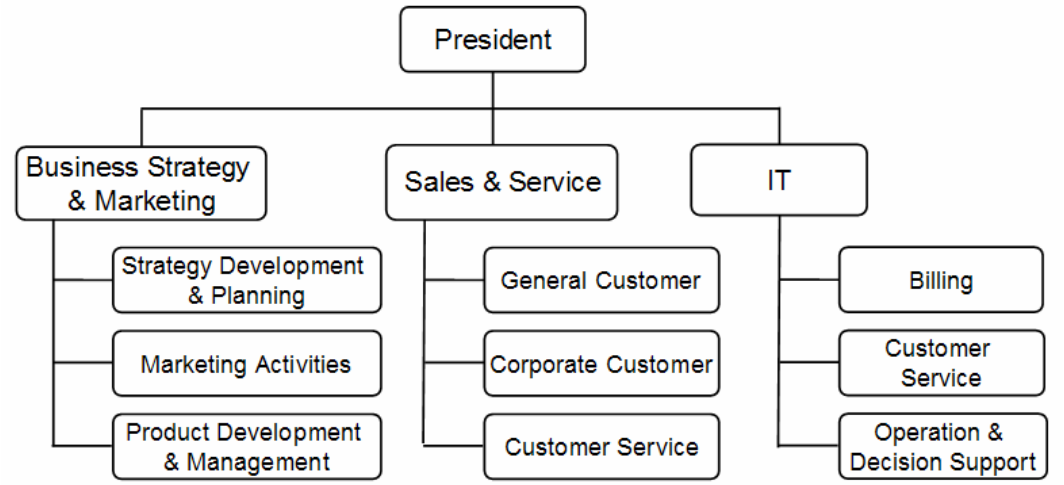
frequently inquired in call center, the distribution of the amount and time of inbound calls, customer waiting time, the amount of calls hanged up by customers, and customer satisfaction rate, etc.

C.4 Organizational Alignment

C.4.1 Structure

The organizational functions supporting CRM operation of Company C are depicted in Figure C-1. In the respect of designing organizational functions according to customer groups, Company C establishes the "enterprise solutions department" which directly provides companies and groups integrated build-to-order communication services. Company C considers that organizing employees based on customer segmentation is not very easy because customer segmentation is not very definite. There are many different ideas of customer segmentation, such as based on age, occupations, or lifestyle, etc. It is not very easy to segment customers clearly. Consequently, the way of Company C is organizing marketing department or product department based on customer segmentation. The customer segmentation is based on some basic information, such as the age or the amount of voice usage. However, Company C thinks that mobile communication services have become utilities so it is more and more difficult to make effective customer segmentation.

Figure C-1. The Organizational Functions Supporting CRM Operation of Company C



In regard to performance measures, Company C has some measurement which could facilitate customer orientation. For example, customer satisfaction is a very important indicator which is related to every employee's performance. Besides, billing is a very important and complicated process of a telecom company, and the key performance indicators (KPI) of the billing department are billing efficiency and quality. It is very important to provide accurate bills to customers on time in every billing cycle.

Regarding the incentive reward systems, Company C defines a formula to calculate the annual bonus, and one of the parameters in the formula is customer satisfaction. An annual customer satisfaction survey is conducted by a third party company for Company C every year. Because customer satisfaction influences the annual bonus of all employees, everyone in Company C becomes more customer-centric and takes care of customers more seriously. In addition, there are other mechanisms for rewarding employees' customer-oriented behaviors. For example, managers can apply for rewards for concrete cases of superior behaviors in CRM.

C.4.2 Processes

In order to realize CRM, Company C has aligned the sales and marketing processes according to CRM. At customer acquisition stage, Company C gathers research reports from consultants or advertising companies to understand consumer behavior and provide products or services meeting customer demands. Regarding acquiring new customers through existing customer's referral, Company C doesn't have a formalized process. At customer relationship maintenance stage, Company C assesses customer value, uses different strategies to retain customers based on customer value, stresses customer loyalty or retention programs, carries out cross-selling, up-selling, and event marketing, and performs recovery management.

In customer evaluation, Company C classifies customers according to the amount of usage (heavy, medium, or low). Company C puts most resources on heavy users to heighten the relationship with them. For example, Company C carries out some customer loyalty or retention programs to high value customers or gives them deep discount. For medium users, the strategy is to enhance the amount of usage through some marketing campaigns and transfer the users to heavy users. As for low usage users, Company C only provides them basic services.

With regard to up-selling and cross-selling, Company C finds out customer segments using a specific value-added service and promotes them complementary or upgrading value-added services. Besides, Company C also executes event marketing, such as promoting special festival products to specific customer segments.

Regarding recovery management, by predicting which high value customers are likely to churn, Company C can develop some strategies to retain them. If customers have decided to churn, Company C will ask them the reasons and continue to follow up other promotions at the right time.

Other value chain processes contain product research and development processes, product design processes, billing processes, and customer service processes. The product research and development process is designed to collect market and customer information from all business functions and is used as major input for product design. For example, through analyzing the demands of different customers' lifestyle, Company C can design rate plans or value-added services which satisfy customers better. The product design process conducts cross-departmental

planning and proactively shares information with other departments. Company C usually forms a project team which includes personnel of marketing, regulation, sales, channel, billing, and IT departments to design and promote products. Regarding the billing process, Company C doesn't make the convergent bill because it involves different business models and demands. In the respect of the customer service process, Company C considers that there is always a process designed to systematically respond, trace, and solve the customer problems through cooperation of different departments, but the question is whether customers are satisfied.

C.4.3 Culture

With regard to market intelligence generation, Company C conducts a focus group to gather customer opinions when launching new products. In customer acquisition stage, Company C gathers research reports from consultants or advertising companies to understand consumer behavior and provide products or services meeting customer demands. Besides, an annual customer satisfaction survey is conducted by a third party company for Company C every year. Company C considers that there are three important parts in telecom industry: business, technology, and regulation. Therefore, Company C quite pays attention to detecting fundamental shifts in the three parts of the industry.

In the respect of market intelligence dissemination, Company C has cross-functional meetings regularly to discuss market trends and developments. Regarding customer satisfaction information, because it is the important indicator of performance and influences the annual bonus of every employee so all employees of Company C knows the customer satisfaction information.

Regarding market intelligence responsiveness, Company C reviews product development efforts to ensure that they are in line with what customers want. Besides, the coordination of the different departments in Company C still could be improved.

C.4.4 Capability

With regard to direction capabilities, the top management of Company C has delivered the customer-oriented concept to the whole company and leads the teams with customer-centric value proposition. For example, the former president of Company C ever requested managers to sit by call center representatives to understand customer demands in the forefront. Company C implemented CRM related technologies earlier than other two telecom companies in Taiwan, but information technology is only an enabler of CRM, and other organizational elements such as processes, culture, and organization structure should be aligned with CRM. One of the founders of Company C is a telecommunication company in the United States which has accumulated much domain knowledge and brought new marketing concepts to Company C. Therefore, in the early days, Company C understood relationship marketing most and had brought this new marketing concept to the telecom industry. The top management of Company C considers that the

telecom industry is highly customer-oriented now and all competitors have already put emphasis on customers.

C.5 Market Performance

The market performance of Company C is presented in Table C-2. Because of the merger with a mobile telecom company, the market share of total mobile subscribers and total revenue of mobile service increased a lot in 2004. Company C has highest ARPU among three major mobile telecom companies in Taiwan.

Finally, based on the interview results and the market performance data of Company C, the score of each construct is depicted in Table C-3.

Table C-2. The Market Performance of Company C

		2003	2004	2005
Total mobile subscribers	Ranking	3	3	2
	Market share	17.7%	30.2%	30.5%
Total revenue of mobile service	Ranking	3	2	2
	Market share	19.5%	34%	34.1%
ARPU	Ranking	2	1	1
	ARPU (NT$)	691	777	882
Churn rate (Monthly)	Ranking	--	2	3
	Churn rate	--	3.73%	2.9%

Source: Annual report, Operational status data released by Company C, the Directorate General of Telecommunications (DGT)

Note: The market performance data in 2004 and 2005 contains the company merged by Company C.

Table C-3. The Research Result of Company C

Constructs	Score	Consolidated Score
Integration among CRM Technology Elements		
Communicational ←→ Execution	3.93	3.98
Execution ←→ Intelligent	4.1	
Intelligent ←→ Communicational	3.9	
Alignment of Organizational Elements of CRM		
Structure	3.37	3.95
Processes	4.13	
Culture	4.23	
Capability	4.05	
CRM Value - Market Performance		
Market Share (Mobile subscribers)	3.9	4.08
Market Share (Revenue of mobile service)	4	
Customer contribution (ARPU)	4.5	
Customer Retention (Churn rate)	3.9	

APPENDIX D: QUESTIONNAIRE

1 = Highly disagree, 3 = Agree to a certain degree, 5 = Highly agree

Integration of CRM Technology Elements

1. Integration Between Communicational CRM and Execution CRM

	1	2	3	4	5
1. The interactive information on customers is captured, stored, and integrated from all customer contacting channels, including the Web, call centers, stores, etc., and the integrated information is accessible by needed customer support staff.	☐	☐	☐	☐	☐
2. There is a repository of customer data that is accessible and provides sufficient transaction data to users who are interacting with customers through different channels.	☐	☐	☐	☐	☐
3. The information on customer transactions and customer interactions is complete and accessible by customer support staff.	☐	☐	☐	☐	☐
4. The information on customer requirements, requests, suggestions and complaints is accessible by the operational departments.	☐	☐	☐	☐	☐
5. The integration of the information from CRM and other customer value-generation applications is well.	☐	☐	☐	☐	☐

2. Integration Between Execution CRM and Intelligent CRM

1. There is a comprehensive repository of customer data where accumulated data about current and historical customer operations are accessible by the needed staff.	☐	☐	☐	☐	☐
2. The data warehouse completely integrates the operational data sources and is sufficient for the analysis requirements.	☐	☐	☐	☐	☐
3. The data warehouse supports generic applications like reporting, queries, online analytical processing (OLAP), and data mining.	☐	☐	☐	☐	☐
4. The data warehouse supports specific applications, such as campaign management, churn analysis, propensity scoring, and customer/product profitability analysis.	☐	☐	☐	☐	☐
5. There are data analytical tools integrated into operational systems so that users can use different methods of customer information analysis for marketing.	☐	☐	☐	☐	☐

3. Integration Between Intelligent CRM and Communicational CRM

1. The information about customer interaction is well organized and fed into the data warehouse.	☐	☐	☐	☐	☐
2. The analysis of customer data is fed back to the front-end customer contact points to support major decisions on customer services.	☐	☐	☐	☐	☐
3. The analysis of customer data is sufficient for decision making on planning effective customer interaction.	☐	☐	☐	☐	☐
4. The analysis of customer data is well used for improving the service quality of communicational CRM.	☐	☐	☐	☐	☐

5. The analysis of customer data is well used for improving the service productivity of communicational CRM.	☐	☐	☐	☐	☐

Alignment Between Technical and Organizational CRM Elements

1. Structure

1. Employees are organized around customer groups and processes rather than products, functions, or geographies.	☐	☐	☐	☐	☐
2. The design of the organizational structure ensures that customers receive seamless services from all parts of the business. Those disintegrated services can be redundant service calls, incomplete order fulfillment, etc.	☐	☐	☐	☐	☐
3. Employees' accountability for the overall quality of customer relationships is clear.	☐	☐	☐	☐	☐
4. Employees' job descriptions for carrying out the customer relationship management activities are clear defined.	☐	☐	☐	☐	☐
5. Performance measures are structured in order to better meet customers' needs and facilitate customer orientation, such as on-time delivery, service responsiveness, and customer satisfaction.	☐	☐	☐	☐	☐
6. Employees are rewarded for engaging in CRM activities and customer-oriented behaviors.	☐	☐	☐	☐	☐
7. Management formulates a clear compensation policy to reward employees for engaging in CRM activities (e.g., building and deepening relationships with high-value customers).	☐	☐	☐	☐	☐

2. Processes

1. We have a formal system for identifying potential customers and identifying which of them are more valuable.	☐	☐	☐	☐	☐
2. We have a formal system in place that differentiates targeting of our communications based on the prospect's value.	☐	☐	☐	☐	☐
3. We systematically present different offers to prospects based on the prospects' economic value.	☐	☐	☐	☐	☐
4. We have a system in place to be able to interact with lost customers.	☐	☐	☐	☐	☐
5. We have a systematic process/approach to reestablish relationships with valuable customers who have been lost to competitors.	☐	☐	☐	☐	☐
6. In order to assess customer value, we continuously track customer information and have a formal system for determining which of our current customers are of the highest value	☐	☐	☐	☐	☐
7. We actively stress customer loyalty or retention programs and attempt to build long-term relationships with our high value customers.	☐	☐	☐	☐	☐
8. We systematically attempt to customize products/services based on the value of the customer.	☐	☐	☐	☐	☐
9. We have formalized procedures for cross-selling and up-selling to valuable customers.	☐	☐	☐	☐	☐
10. We try to actively manage the customer referral process.	☐	☐	☐	☐	☐

11. The research and development process is designed to collect market and customer information from all business functions and is used as major input for product design. ☐ ☐ ☐ ☐ ☐

12. The product design process conducts cross-departmental planning and proactively shares information with other departments. ☐ ☐ ☐ ☐ ☐

13. The billing process is capable of providing integrated bill information of all consumption related to the specific customer. ☐ ☐ ☐ ☐ ☐

14. The customer service process is designed to systematically respond, trace, and solve the customer problems or service requests through cooperation of different departments. ☐ ☐ ☐ ☐ ☐

3. Culture

3.1 Market-orientated culture — Departmental (Kohli et al., 1993)

I. Intelligence generation

1. We contact customers frequently to find out what products or services they will need in the future. ☐ ☐ ☐ ☐ ☐

2. We are fast to detect fundamental shifts in our industry (e.g., competition, technology, regulation). ☐ ☐ ☐ ☐ ☐

3. We periodically review the likely effect of changes in our business environment (e.g., regulation) on customers. ☐ ☐ ☐ ☐ ☐

II. Intelligence dissemination

1. We have interdepartmental meetings at least once a quarter to discuss market trends and developments. ☐ ☐ ☐ ☐ ☐

2. When something important happens to a major customer or market, the whole business unit knows about it within a short period. ☐ ☐ ☐ ☐ ☐

3. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis. ☐ ☐ ☐ ☐ ☐

4. When one department finds out something important about competitors, it is quick to alert other departments. ☐ ☐ ☐ ☐ ☐

III. Responsiveness

1. We periodically review our product development efforts to ensure that they are in line with what customers want. ☐ ☐ ☐ ☐ ☐

2. If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately. ☐ ☐ ☐ ☐ ☐

3. The activities of the different departments in this business unit are well coordinated. ☐ ☐ ☐ ☐ ☐

4. If we came up with a great marketing plan, we probably would be able to implement it in a timely fashion. ☐ ☐ ☐ ☐ ☐

5. When we find that customers would like us to modify a product of service, the departments involved make concerted efforts to do so. ☐ ☐ ☐ ☐ ☐

3.2 Market-orientated culture — Individual

Empowerment

1. Employees are involved in decision making with regard to customer problems in their department.	☐	☐	☐	☐	☐
2. Employees are given the power to make critical decisions on customers' problems.	☐	☐	☐	☐	☐
3. Employees' capabilities could be unleashed with an opened manner.	☐	☐	☐	☐	☐
4. Employees are more creative and proactive when they are serving customers.	☐	☐	☐	☐	☐

4. Capability

1. Business managers are interested in learning about changes in customer behavior and provide feedback on customer information.	☐	☐	☐	☐	☐
2. Business managers attentively listen to customer responses to measure and improve corporate performance.	☐	☐	☐	☐	☐
3. Business managers are capable of generating insights from the customer information.	☐	☐	☐	☐	☐
4. Business managers are capable of aligning functional areas with business strategies.	☐	☐	☐	☐	☐
5. Business managers are capable of promoting interdepartmental cooperation and interaction.	☐	☐	☐	☐	☐
6. Business managers are capable of sharing information and integrating opinions across departments.	☐	☐	☐	☐	☐
7. CRM users are capable of acquiring and transforming information to aid customer knowledge discovery and the development of clear market segments and portfolios.	☐	☐	☐	☐	☐
8. Business managers have the capability to translate customer information into service offerings.	☐	☐	☐	☐	☐
9. Business managers are capable of directing the team with the company's customer-centric value proposition and strategy in all team efforts, including marketing, sales, service, product development, and so on.	☐	☐	☐	☐	☐

CRM Value

Market Performance (Homburg and Pflesser, 2000)

	Low				High
1. Achieving customer satisfaction?	☐	☐	☐	☐	☐
2. Providing value for customers?	☐	☐	☐	☐	☐
3. Keeping current customers?	☐	☐	☐	☐	☐
4. Attracting new customers?	☐	☐	☐	☐	☐
5. Attaining desired growth?	☐	☐	☐	☐	☐
6. Securing desired market share?	☐	☐	☐	☐	☐
7. Are there any other market performance indicators that grow significantly after CRM implementation?					

2. Financial Performance (Claycomb et al., 1999)

	Well below industry average				Well above industry average
1. Average return on investment over the past 3 years	☐	☐	☐	☐	☐
2. Average profit over the past 3 years	☐	☐	☐	☐	☐
3. Profit growth over the past 3 years	☐	☐	☐	☐	☐
4. Average return on sales over the past 3 years	☐	☐	☐	☐	☐