Toward a Unified View of Customer Relationship Management

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ABSTRACT

Competitions in the new economy have caused major changes in business strategies from internal product focus to value creation along the demand and supply chains. Companies are extending their operational and decision structures to include those of their customers, suppliers, distributors, and alliance partners. Product-centric strategies are replaced by customer-centric strategies that facilitate value creation. Focuses on transactional efficiency are replaced by new requirements to integrate and optimize the value chains between the customer, the firm and its extended enterprise. Disparate business processes and systems, compounded by the proliferation of customer contact points and channels, have created incompatible and disconnected views of customers. The inability to synchronize information and processes across various customer touch points may result in negative customer experience and lost opportunities for the firm. Disconnections between CRM operations and CRM analytics can negatively impact marketing effectiveness, customer retention and loyalty. Lessons learned from past CRM implementations have provided guidance pointing to integrated strategies that not only include technologies, but also include business processes, information and organizations. Forward looking CRM strategies can leverage customer intelligence created by CRM analytics that enhances CRM operations, and conversely, CRM operations collect critical customer data for CRM analytics. To attain optimization of CRM performance, metrics need to be defined across the enterprise driven by customer-centric goals. For customer relationship management to take to the new level of value creation, businesses require a strategy that creates a unified view of customers from the perspectives of operations, analytics and collaboration along the entire customer relationship management value chain. This paper proposes an integrated framework for CRM through the construct of the enterprise model.

INTRODUCTION

As we move from the industrial economy to the knowledge-based economy, the focus of production efficiency is shifted to value creation throughout the entire value chain. Customer relationship management is a key ingredient in the value creation strategy. While CRM technologies have matured in the last decade, their implementation failure rates are high, ranging from 55 to 75 percent according to the Meta Group (Johnson 2004). Key reasons for failure include the failure to create an enterprise-wide CRM strategy, the inability to integrate with legacy systems, and not having an approach to analytics (McKenzie 2001, Greenberg 2002, and Bannan 2004). It seems that history does repeat itself with enterprise applications. Lewis (2001) points out that ERP implementations also suffer the 70-percent failure rate. One of the key lessons learned from ERP implementations is that they are not just software implementations. They come with built-in business processes (Lewis 2001). Business process and integration issues that haunted many ERP implementations are also leading causes of failure for CRM implementations. The issues with CRM can be compounded by disparate views of customers through different channels, processes and systems. Information about customers can be captured through various transactional systems and got buried in their respective silos. CRM technologies can also come in multiple flavors. As pointed out by Bannan (2003) that many CRM deployments are specific applications providing point solutions such as automated alerts and email, or handling segment predictive modeling. Furthermore, there exist many types of CRM. The Meta Group described three CRM ecosystems: operational CRM, analytical CRM and collaborative CRM (Kelly 1999). Web-based applications and wireless applications further yield classifications in eCRM and wireless CRM.

Johnson (2004) points out that CRM is more than just technology. While technology is a key enabler, it is only a means to the end. McKenzie (2001) articulates that CRM is a combination of strategy and information system aimed at focusing attention on customers in order to serve them better. An integrated business model that ties together business organizations, processes, information and technologies along the entire value chain is critical to the success of CRM strategies. The holistic view of customers must include information from various customer interactions with the firm through sales and marketing, call centers, customer service, the Web, distribution channels and alliance partners. McKenzie (2001) points out the importance of integration along the value chain to provide better customer service, by organizing, aligning and integrating the organization processes all the way from the point of customer contact, through the organization and back through the supply chain. The CRM enterprise model...
proposed in this paper provides the integrated framework for the creation of a unified customer view amongst disparate systems, processes and channels across the enterprise.

**THE DISCONNECTED VIEWS OF CUSTOMERS**

Customers can interact with a firm in many ways and through many channels. Customer interactions may include the transactions at retail outlets or on the Web, the participation in direct mail campaigns, the mailing in of rebate cards, and the complaints and inquiries via phone, mail, or the Web. Disconnected views of customers can be caused by disparities in an organization created by system and organizational boundaries, which can result in negative customer experience and the loss of opportunities for the firm.

**Functional and Process Disparity**

Technology investments in the past decades have created the legacies confined by the boundaries of systems and organizations. Many system implementations have become information and decision silos within an enterprise. Customer information collected in these systems got buried in their respective silos and are not shared and leveraged across the enterprise to improve customer relationship. Each functional area in sales and marketing, distribution, production, and supplier management acts as separate silos and makes decision based on its own objectives. As pointed out by Fraser et al. (2003), decision making fragments across a business as different functions become entities in themselves.

At the front end, marketing and sales interact with customers in many ways. Disparity may occur between marketing and sales. Sales strategies may not leverage marketing intelligence and conversely, marketing efforts may not leverage sales data. It is not uncommon that a consumer receives many promotional offers without regard to previous sales data. Many businesses are struggling to evaluate marketing effectiveness tying sales performance to marketing campaigns. At the back end, the order fulfillment and inventory control processes can greatly affect customer experience. Due to the lack of experience with the back-end order fulfillment processes, ToysRUs.com failed to deliver toys on time during the 1999 Christmas season, which caused 1 in 20 children not getting presents from ToysRUs.com in time for Christmas (Turban et al. 2004). Kmart’s problems in supply chain management often have caused on-sale merchandise out of stock when customers got to the store (Konicki 2002), which contributed to its failure and filing for bankruptcy in 2002. Customers’ change orders may not be handled swiftly because of the disconnection between order processing, production and supplier management.

Functional and process disparities in an organization can be caused by the boundaries created by systems. They include systems supporting various functions in the enterprise such as Enterprise Marketing Automation (EMA), Sales force automation (SFA), Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP). Other enterprise systems spanning across functional areas include Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Knowledge Management (KM) and different flavors of CRM. These systems whether custom-built or packaged, all have direct or indirect impact to customer experiences. A customer’s experience in customer service may be greatly impacted by the ability of sharing real-time information between many systems within an enterprise. Disconnected views of customers created by disparate systems and processes can hamper the ability of customer service to quickly implement corrective actions upon customer inquiries and complaints, resulting in negative experience for the customer.

**Channel Disparity**

Customers’ interactions with an organization can be through many different channels, including direct marketing, direct sales, retail and wholesale outlets, customer service, call centers, Web sites and alliance partners. Channel conflicts may occur in many areas including the management of goals, information, processes, systems, organizational structures and incentives. Different channels have different goals which may not drive optimization at the customer level. Turban et al. (2004) refer channel conflict to situations where the online marketing channel upsets the traditional channels due to real or perceived damage from competition. Organizations may fail to leverage customer information collected at different touch points due to the lack of integration and coordination. Winer (2001) points out that any contact or touch points that a customer has with a firm is a customer service encounter and has the potential either to gain repeat business or to have the opposite effect. Disparate business processes and technologies supporting various channels create further disconnections. Organizational structures and incentives may not entice the behaviors that put the customer first. All these disparities across different channels can result in poor customer experience and lost opportunities for the firm.
Operational and Analytical Disparity

Valuable customer insights can be derived from operational data obtained from various channels and customer touch points. Such insights created by analytic processes can greatly improve future operations. However, disparity often exists between operations and analytics. Valuable information from operations got buried in silos and is not leveraged in analytical processes across the enterprise. Conversely, business insights created by analytical processes are not tied to the improvement of operational processes. For example, specific target marketing campaigns may not benefit from general cross-selling strategies due to the lack of integration of cross-selling analytics to specific marketing processes. Businesses are collecting vast amount of customer data from various transactions. The challenge however is to transform these mountains of data into useful customer insights that can be leveraged to improve customer operations. Disconnection of the operational and analytic feedback loop will hamper effective customer operations and the creation of critical customer intelligence.

A UNIFIED VIEW OF CRM VIA THE ENTERPRISE MODEL

A unified view of CRM is an enterprise view that looks at the customer from the customer’s value chain’s perspective and not the perspectives of the firm or the product. They include the many touch points that are possible for customer interactions. Kalakota et al. (2000) describe the need for an integrated CRM architecture, where CRM processes are designed around the customer rather than internal functional silos. The portfolio of CRM processes includes cross-selling and up-selling, marketing and fulfillment, customer service and support, field service operations and retention management. Kalakota et al. (2000) further explore the requirements for the integrated CRM architecture, which include the integration of customer content, customer contact information, end-to-end business processes, the extended enterprise and systems. In the following, an integrated framework for CRM is developed through the construct of the enterprise model. Businesses are anticipating great benefits in adopting an enterprise-wide integrated CRM strategy. For example, in the insurance industry, Ciraulo et al. (2002) indicate that enterprise-wide CRM integration can help maximize underwriting results, support profitable growth, and expand customer relationship. In the banking industry, Tillett (2000) points out that by pulling together data from across a bank’s disparate computer systems, officials hope to implement more targeted marketing efforts and be more responsive to customers based on their entire relationship with the financial institution.

In 1975, the American National Standards Institute introduced the “3-Schema” architecture to provide a unified view of data independent of physical implementation and usage (ANSI/X3/SPARC, 1975). The 3-Schema addresses the construct of data based on three levels of representation: the conceptual schema represents the logical view of data, the internal schema represents the physical data storage definitions, and the external schema represents the user application views of data. The fundamental concept is the separation of the data definition (the “what”) from its physical representations and usage (the “how”, “where”, “when”, “who” and “why”). While the 3-Schema provides the foundation of data definition in the development of databases and their applications, the fundamental concept can be extended to enterprise information management for CRM to provide a unified view of customers independent of organization, process and system implementations. Figure 1 illustrates the construct of the CRM enterprise model framework.

Figure 1: The Enterprise Model Framework for CRM

<table>
<thead>
<tr>
<th>External CRM View</th>
<th>Analytic CRM</th>
<th>Conceptual CRM View</th>
<th>Internal CRM View</th>
</tr>
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<tbody>
<tr>
<td><strong>OCRM</strong> (Operational CRM)</td>
<td><strong>ACRM</strong> (Analytic CRM)</td>
<td><strong>CCRM</strong> (Conceptual CRM)</td>
<td><strong>TCRM</strong> (Technical CRM)</td>
</tr>
<tr>
<td>User Applications</td>
<td>Business Processes</td>
<td>Organization Structures</td>
<td>Physical Data Storage &amp; Structure</td>
</tr>
<tr>
<td><strong>EDM</strong> Enterprise Data Model</td>
<td><strong>ADM</strong> Analytic Data Model</td>
<td><strong>OFM</strong> Operational Function Model</td>
<td><strong>Software Components &amp; Tools</strong></td>
</tr>
<tr>
<td><strong>EIR</strong> (Enterprise Information Roadmap) = {RELATIONS between the components of OCRM, ACRM, CCRM &amp; TCRM}</td>
<td><strong>Hardware Platforms</strong></td>
<td><strong>Communications Networks</strong></td>
<td><strong>Hardware Platforms</strong></td>
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At the conceptual level, the Conceptual CRM view consists of the conceptual definition of data and business functions for customer relationship management across business units and processes of an enterprise. Business functions and the associated data can be defined independent of the organization and process implementation. The conceptual data models consist of the Enterprise Data Model for CRM (EDM) supporting the operational CRM data requirements of an enterprise, and the Analytic Data Model for CRM (ADM) supporting the analytic CRM data requirements of an enterprise. Operational CRM data consist of transactional data from sales, surveys, customer inquiries and other customer interactions. Analytic CRM data consists of aggregate data along subject areas for analytical processing. The function models for CRM consist of the Operational Function Model (OFM) and the Analytic Function Model (AFM). The function model defines “what needs to be done”, which can be implemented by different processes utilizing different technologies. For example, the operational function of managing customer inquiries may be implemented by a call center process or a Web-based self-service process using different technologies. Similarly, the analytic function of determining cross-selling strategies may be implemented by various online analytic processing and data mining tools.

At the external level, the Operational CRM model (OCRM) describes the business processes, events, people and organizations that are required to implement the day-to-day business operations. The components of the OCRM consist of the user application view, the business process view and the organization view. For example, OCRM may include processes for 1-1 marketing campaigns, call center operations and Web-based applications. Similarly, the Analytic CRM model (ACRM) consists of different types of analytic structures for an enterprise supporting various processes in decision support, predictions, forecasts and estimations. The components of the ACRM consist of the user application view, the analytic process view and the decision structure view. For example, ACRM may include online analytical processing and data mining processes such as statistical modeling and artificial neural networks. As illustrated in Figure 2, there exists a feedback loop between the OCRM and ACRM depicting the relationship between operations and analytics. Operational CRM and analytic CRM nourish each other in the feedback loop. Analytic CRM creates customer intelligence that enhances future customer operations, whereas operational CRM captures critical data required for CRM analytic processes.

At the internal level, the Technical CRM Model (TCRM) represents the physical implementations describing the technical “how”, “where” and “when”. The TCRM consists of the internal views of data structure and storage, software modules, hardware platforms and communications networks. The internal view of CRM represents the technical architecture supporting CRM strategies.

The key concept behind the enterprise model is the physical separation of the conceptual, external and internal views of the enterprise, but yet preserving their logical connections. The Enterprise Information Roadmap (EIR) defines the mappings and rules of associations between the various components of the enterprise model. The virtuality of the model (the three layers and respective components being physically separated but logically connected) insulates enterprise information assets from process, organizational and technological changes. The enterprise model serves as the blueprint for the integration of CRM data, processes, and systems. It provides a unified view of the customer independent of process and technical implementations.

APPLICATIONS

An Integrated Framework for CRM

The enterprise information roadmap ties various processes and technology representations to the conceptual CRM through the mappings of corresponding components in the enterprise model. For example various representations of a customer stored in different databases and file systems can be mapped to a common data definition in the enterprise data model. Similarly, various process implementations of customer service through call centers and Web applications can be mapped to a common functional definition in the function model. The
conceptual CRM therefore provides a unified view of CRM tying together the associated processes and technologies in the external and internal levels. Figure 3 illustrates how different processes and technology implementations can be tied together and coordinated through the enterprise model. Furthermore, the model allows the consolidation and coordination of data and events across different processes through various customer touch points and channels. For example, the event of returning goods triggers the process of refunds to the customer. The event of a change order may trigger different processes in the supply chain. Different types of data from Web-based transactions, call centers, point of sales, marketing surveys, mail in rebate cards, and other touch points can be consolidated via the conceptual CRM model creating useful information and knowledge about customers. CRM process and technology implementations at the external and internal levels are mapped to the conceptual model creating the roadmap for the integration of data, processes and technologies.

Customer-Centric Data Warehouses

Chan (2003) describes the construction of data warehouses using the enterprise model. The CRM enterprise model can be used to develop customer-centric data warehouses and data marts which provide the data for CRM analytics. The analytic data model and the analytic function model provide the conceptual framework for the customer data warehouses and data marts. The analytic data model can be constructed from the enterprise data model by associating data entities along subject areas based on the requirements defined in the analytic function model. For example, the analytic function of determining what products to cross-sell to a specific segment of customers requires data from many sales transactions over a long period of time for a particular segment of customers covering many product lines. Techniques in dimensional modeling can be deployed to construct the analytic data model (Todman 2001). Data from customer interactions are captured in various transactional systems. Transactional data in conjunction with legacy and external data are extracted, transformed and loaded (ETL) into the target data warehouses or operational data stores (ODS) that provide the data feeds for the target data warehouses and data marts. As illustrated in Figure 4, customer data warehouses and data marts across the enterprise are mapped to their respective data sources which are logically connected to the conceptual CRM model. The conceptual CRM model thus provides the integrated framework for customer data warehouses and data marts across the enterprise.
Customer Intelligence

With the advance of technologies, companies are collecting data about customers from all different sources spanning across all areas of an enterprise through many different business processes and involving many business units. Information collected about customers can be used for various analytic processes to create customer intelligence to better profile and classify customers, predict customer behavior, conduct target marketing, cross and up sell into existing customer base. As pointed out by Todman (2001), the secret to customer relationship management is “to know who our customers are and what it is that they need from us”. Customer data warehouses provide the data feeds for the analytic processes that create valuable customer intelligence. Customer intelligence facilitates the optimization of customer interactions, which helps in customer retention and promoting the right mix of product offerings to the right customers, at the right time and through the right channels. Analytic processes and their respective systems implementation may include various modeling and analysis techniques and tools, such as online analytical processing, data mining, Web mining, knowledge-based and intelligent systems. Figure 2 illustrates the feedback loop between the operational CRM and the analytic CRM. Critical customer information obtained in operations becomes the input to the analytical processes, which in turn create the customer insights to enhance future operations. For example, information from sales transactions can be used for data mining to uncover hidden buying patterns, which in turn enhances cross-selling opportunities. Customer intelligence may further explore the reasons for customer loyalty and customer churn, providing critical insights into specific marketing strategies. Customer analytics may include financial metrics to determine customer profitability, which is becoming an important measure in CRM.

Technology Implementation

The ability to integrate with legacy systems is a critical success factor for CRM implementations. CRM software not only comes with its own built-in processes it also comes with its own data schema with specific formats and semantics. Customer data that exist in files and databases of many legacy systems need to be consolidated and shared. Different system functions should be leveraged and coordinated to support new processes. Implementing a new CRM module is like adding a room to an existing house. It requires the guidance of the blueprint of the house to ensure everything fits together both in function and form. Point-to-point integration without a roadmap for information and functional sharing quickly increases the level of complexity, redundancy and inconsistency across the systems. The enterprise model provides an integrated framework for information and process sharing between various systems including CRM, ERP, SCM, MRP and other legacy systems. The separation of the conceptual, external and internal levels of the enterprise model further protects the CRM initiatives from technological changes.

Customer Value Chain Integration

Porter (2001) describes the five overlapping stages in the evolution of technologies in business: automation of discrete transactions, functional enhancement of activities, cross-activity integration, integration of the entire value chain, and the
optimization of various activities in the value chain in real time. All of these stages are applicable to the evolution of CRM strategies. The focus of CRM in the last two decades was on automation, functional enhancements and some cross-activity integration. CRM strategies have to move beyond these stages to the integration and real-time optimization of the CRM value chain that spans across the value chains between the customer, the firm and its extended enterprise. This requires a real-time integrated model of information, business processes and technology platforms across multiple value-chains in the extended business enterprise. It further requires the cross-functional and cross-organizational integration of operations and analytics. The enterprise model provides the framework for CRM value chain integration and optimization to facilitate value creation both for the customer and the firm.

Enterprise performance metrics for CRM

According to an AMR Research study, many CRM projects fail to provide real, reportable business ROI due to the lack of measurements (Preslan 2003). The inability to align the correct metrics across the business enterprise was a critical reason for such failure. Traditional metrics that drive functional excellence often produce sub-optimizing performance. Kaplan (1992) introduces the concept of the balanced scorecard that complements financial measures with operational measures on customer satisfaction, internal processes and organizational innovation. Khirallah (2000) points out that common measures of CRM today are largely sub-optimal and default quickly to sales and marketing. It further proposes a CRM balanced scorecard to include multiple variables in measurements. Lenskold (2004) in the discussion of marketing ROI emphasizes the importance of customer-centric strategies and related measurements and analytics. It is further pointed out that customer contacts can no longer be driven by products or business units. Therefore, true optimization of CRM performance can only occur at the enterprise level driven by customer-centric goals taking multiple variables into consideration across different functional areas. Different metrics in sales, marketing, customer service, and operations can be tied together to drive customer profitability, customer satisfaction and market share. Optimization of the CRM value chain requires an integrated framework for performance metrics across functional and organizational boundaries. The enterprise model provides the framework for enterprise CRM performance metrics to be defined, measured and tracked.

CONCLUSION

The focus of customer relationship management has evolved from customer satisfaction to the creation of values for the customer. In this model of value creation, customers are viewed as active participants in the value chain and not just the recipients of goods and services. It is important to look at customers from the customers’ viewpoint and not from the product or company centric views. Customers can interact with many entities along the value chain directly or indirectly and through multiple channels. The value creation paradigm requires the integration and real-time optimization of the value chains between the customer, the firm and its extended enterprise. The new model also requires a forward looking strategy to anticipate customer needs based on customer intelligence. Furthermore, an integrated set of metrics can be defined across the enterprise to measure customer relationship performance that ultimately drives customer profitability. This paper proposes an enterprise model framework that provides a unified view of customers and the integration of operational, analytical and collaborative CRM across different processes and technologies in the CRM value chain.

REFERENCES
