CRM Measurement Frameworks

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Abstract

Comprised of several distinct disciplines and cutting across just about all business units within most companies, customer relationship management (CRM) measurement is complex. Companies use CRM measurements for different purposes; digital channels provide for new measurement and product/service distribution options; businesses are fractured internally with inconsistent communication and often incompatible systems. Despite this complexity, companies are adopting measurement systems, or frameworks, that have acceptance in the marketplace. These frameworks range from the strategic to the operational. How companies build and deploy a CRM measurement framework depends on the planning horizon under consideration, the market volatility, the company's overall strategic posture and goals, and how much of the organization and customer base is impacted by the CRM solutions considered. In addition, how customer knowledge is created and utilized for benefit is under continual debate with different points of view. This paper reviews the key issues in CRM measurement, offers some attributes for describing and evaluating CRM measurement frameworks, and suggests several implementation approaches.

Introduction

A customer relationship management (CRM) practitioner at a large consumer goods company once said many in his company have determined the three-letter acronym CRM stands for "Can't Really Measure." That phrase stuck in my mind for some time. It seems odd in light of the fact that over time businesses have been quite clever about measuring a great many things. Why would this company, filled with some very bright people, feel measurement and CRM just don't get along? The answer probably lies in the fact that companies have just started measuring customer activity in any real depth and breadth. Implementing CRM software can be done quickly. It takes companies time to learn how to measure properly.

Many businesses have bought technology solutions at a rate faster than those solutions can deliver real value. While the reasons for this are varied, the ability to properly measure customer-facing activity is obviously crucial for successfully managing CRM programs. To complicate matters further, measuring customer-facing activity is one of the most complex and varied measurement endeavors businesses can undertake. The area of study is relatively new and undergoing significant change as new technologies are beginning to blur the lines of distinction between information channels. Customers are interacting with businesses across far more information channels than they did 25 years ago. More and more activity is being pushed to interactive, real-time digital information channels, providing businesses with unprecedented potential for observing and measuring customers in new ways.

The way businesses have been traditionally organized, along functional and product lines, may be insufficient to take full advantage of the apparent and latent opportunities in measuring customer activity. Many companies are seeking to shift the central focus of corporate activity away from products and on to customers or at the very least to learn new ways of managing customer-facing activities. To effect this change, businesses will need to build out new, more robust measurement systems, replacing or standing alongside existing product oriented measurement systems. Designing and managing these measurement systems and the CRM technologies around them requires new combinations of skills and roles, for which many companies have not planned.

Change begins with knowing. In order to successfully build out these new customer-oriented capabilities, companies will need to build out new ways of knowing customers.

Target Audience

This paper was written with the CRM practitioner in mind. Many companies have created new staff positions to assist in building out customer-facing capabilities and skills. These positions have various titles, often with the term CRM, 1:1, interactive or integrated marketing and e-business in them. People holding these positions have varied backgrounds and come to the position with a partial view of the measurement approaches available. The purpose of this paper is to give these practitioners a starting place from a high enough level where the full CRM measurement field can be surveyed.

CRM Background

Definition

In order to understand CRM measurement, we must first define CRM. Definitions abound. Many vendors, consulting firm, and even companies, build their own definition of CRM partially mindful of how other are defining the term. Because of this, while definitions are diverse, the market seems to have coalesced along three "kinds" of definitions:

1. Technology centric
2. Customer lifecycle centric
3. Strategy centric

Technology centric definitions of CRM evolve out of the need for vendors to position their particular product, which often automates just a portion of the CRM problem, in the best or broadest possible light. These definitions include the use of technology within them. For some of these definitions, CRM is nearly synonymous with technology.

Customer lifecycle definitions evolve out of the need for CRM practitioners to describe a new business capability, or a new arrangement of capabilities, that focuses on the customer lifecycle, not the product lifecycle. The customer lifecycle, often described somewhat differently, has four phases:

1. Attracting
2. Transacting
3. Servicing and supporting
4. Enhancing

In the attraction phase, a customer becomes aware of the product or company, develops interest and tries to understand the product or company. In the transacting phase, the customer has moved to the next level of commitment and decided to procure a product or service. In the service and support phase, the customer requires the company's assistance installing, using or servicing what was procured. In the enhancement phase, the customer may be thinking about purchasing additional products or services. For the majority of companies, especially larger ones, the parts of the companies that interact with the customer throughout this lifecycle are separated from each other and not optimally coordinated or integrated. The customer lifecycle definition of CRM often describes CRM as the ability to seamlessly interact with or market to the customer across this lifecycle.

Strategy centric definitions look primarily to free the term CRM from any technology underpinnings and to a lesser extent from specific customer management techniques. These definitions describe CRM as a technique to compete successfully in the market and build shareholder value.

Definition Used in the Paper

For the purposes of this paper, CRM is defined as a business strategy aimed at gaining long-term competitive advantage by optimally delivering customer value and extracting business value simultaneously. As such, this definition lands squarely in the strategy-centric camp. The reason for this is two-fold.

First, anything that measures customer-facing activity has the potential to measure those activities that create the business value in the first place. Having the best manufacturing capability is useless if customers don't buy. Customers have differing mindsets and needs to fulfill and companies need to be able to understand that mindset, sense those needs and deliver solutions. Technological innovation and information liquidity have changed competitive landscapes. Fewer and fewer companies can exploit propriety, one-of-a-kind technology or captive and exclusive supply or distribution channels to maintain competitive advantage (Chew, 2000). For the vast majority of businesses, the ability to acquire, retain and enhance customer relationships is the last place left to find advantage. CRM and its accompanying measurement potential, is then a key technique for understanding customers and managing ongoing customer activity (and by argument, shareholder value).

Second, while technology is deployed to provide customers with a more seamless experience across channels and throughout the customer lifecycle, that capability alone may be an insufficient long-term competitive advantage. Once every company has mastered the art and science of providing a seamless customer experience, what is next? Because CRM measurement systems can be used to understand past and future customer behavior, the ability for companies to convert that knowledge into business results can be a significant form of competitive advantage (Peppers & Rogers, 1997). Knowledge about how a company interacts with its customers is specific to the company's brand and its customers and therefore is proprietary to that company. Knowledge about this unique relationship is not easily transferred to another context (another company, brand and customer). One can argue that CRM measurement systems and CRM analytic capabilities are the last refuge for significant competitive advantage. Interestingly enough, because of the skills challenge companies face, the vast majority of companies do not fare well in this area, which also makes for a strategic opportunity for competitors (Buytendijk & Hersche 2001)

Technology-Driven Change

Technology is the primary impetus behind CRM approaches. Despite that fact that this paper uses a strategy-centric definition, most likely you would not be reading this paper had it not been for the explosion of technological capabilities. These new capabilities affect how information and products are distributed and how companies integrate and communicate across product and functional silos.

Information Channels

CRM technologies now can automate or manage how information is delivered to customers across the following channels:

1. Face-to-face
2. Mail
3. Phone (wired and wireless)
4. Fax
5. Web and e-mail (wired and wireless)

Companies have tended to (and to a great extent still do) optimize their capabilities on a channel-by-channel basis. Companies typically build out the organizational and technology capabilities, look at benchmark data, and then working towards meeting key single-channel metrics. For example, many businesses have call centers, which over the past two decades have undergone technological and operational improvements, yielding performance improvements in that channel. Today however, the vast majority of businesses with call centers have yet to develop superior multi-channel coordination capabilities.

With the tremendous Internet build out over the past six years, history has repeated itself. Nearly all companies with web sites have focused on single-channel excellence and are just now realizing the cross-channel implications, benefits and the concomitant measurement hurdles. For web-based customer interactions, single-channel measures abound and companies struggle to relate these metrics to other channels.

Product distribution

With the Internet, companies have the ability to distribute all or portions of their product or service digitally and direct to the customer. Information-based products, such as news and research are being distributed digitally. Books are now being distributed digitally. The photography market is undergoing some major transformation as digital cameras are beginning to replace film cameras. Where digitization of the product is impossible (soup for example!), parts of the product service bundle are quickly getting digitized. When a consumer asks a soup manufacturer, via its web site, for ideas on new uses for the soup, the manufacturer can now send tips and recipes electronically. Product specifications and reviews, prior customer experiences with those products and consumer reports are all available online.

For those companies that can't go direct to the end-user or the consumer and have channel partners to contend with, extranets and demand chain digitization are allowing electronic movement of pieces of the product/service bundle. Insurance carriers and brokers use electronic forms to communicate insurance risk, quotes and contracts between end-user and carriers. Auto dealers and manufacturers share electronic documents that manage warranty repairs and maintenance on consumers' cars.

The complete or partial digitization of the product/service bundle is making new forms of customer measurement possible.

Functional Silos

Companies have long since decomposed themselves into groups that have historically been considered a set of closely related skills. Typical groupings that touch the customer include:

1. Marketing
2. Sales
3. Manufacturing
4. Logistics and distribution
5. Field service
6. Contact center
7. Billing and accounting

Over the past two or three decades, technological advances have had significant impact in these functional groups. In nearly every case, the goal was excellence within the functional silo. For example, call center technology has increasingly utilized technology to accept incoming calls, route them, measure call traffic and collect and distribute customer data to call center agents significantly improving the contact center's

capabilities. However, many if not most of these contact centers have not integrated other communication channels such as fax and web interactions effectively. In the web world, brochure-ware product and service web sites went up first, since these were the easiest to build from a technology perspective, and since this represented the digitization of a single functional silo: marketing. Later, as the technology matured, the sales function followed with electronic transactions over the Internet. And today, many web sites are not well integrated with other technologies running other areas of the business such as point-of-sales, inventory and call center systems.

Again, as with single-channel focus, functional area focus created isolated technology and business process islands. Business processes and the technologies deployed did not and still do not easily accommodate cross-functional silo planning, coordination and execution. Enterprise software vendors have begun to address this cross-functional silo problem with some technology integration, but the vastness and complexity of the customer-focused part of the business has still left the customer-facing business processes fractured in several dimensions.

Product Silos

Still another key dimension involves product silos. Again companies have historically aligned themselves around the means of production, that is, around products or product groupings and either have replicated all or some portion of their customer-facing teams (sales and service) across the product silos. Many manufacturing and consumer goods firms are organized this way for good reasons. The wide range of difficult issues in managing products requires management to limit its focus and build core capabilities from the product outward. While modular manufacturing has let businesses decompose products into assemblies that are brought together later and even customized for customers, designing a modular system is much more difficult than comparable non-modular ones (Baldwin & Clark, 1997). Many managers continue to look at business through "the twin lenses of mass marketing and mass production" rather than with the "twin logic of mass customization and one-to-one marketing." (Pine, et al., 1995).

The challenge for traditional, product-oriented companies is in pulling together customer measurement data from across the different product silos so that customer behavior can be researched more comprehensively. Having cross-category and cross-product sales and marketing data helps companies bundle several products into better solutions as well as identify customer needs that extend beyond one product category. Especially for consumer packaged goods firms that have dozens of different and sometimes competing brands, the real challenge is in figuring out ways of leveraging the product portfolio to sell more of their brands to their customers.

Data warehousing, data integration, data quality and data mining tools have all been brought to bear on this problem. Data warehousing and data integration tools help companies consolidate customer data. Data quality tools ensure that data is accurate, reliable and consistently presented across the company. Data mining tools have helped companies find information within data faster than would otherwise be done. These tools serve as the backbone driving CRM systems and have enabled the measurement frameworks in place today.

The Purpose for CRM Measurement

The reasons companies measure customers is obvious. In order to manage effectively, one must measure. Businesses have long since measured financial performance with traditional financial measurement tools: profit and loss statements, balance sheets and cash flow statements. These measurement frameworks suffer from limitations; they measure past activities and are "lag" versus "leading" indicators (Kaplan & Norton, 2001). Kaplan and Norton created the balanced scorecard to address some of these deficiencies

and have expanded the tool to measure strategy. In this example, the balanced scorecard intends to predict future financial performance and track how effectively the corporate strategy is executed.

What companies need from measurement systems can vary from the mundane to the profound. The social sciences have established rigorous theories of measurement and research design to ensure experiments themselves and the conclusions researchers reach are valid (Trochim, 2001). While these principles have influenced some CRM practices today, many businesses look at measurement in less theoretical terms. With that in mind, three main uses for CRM measurement systems are:

1. To influence or validate decision making
2. To guide ongoing activities or tactics
3. To predict future states

Influencing or validating decision making

Companies implement CRM measurement very differently based on their internal decision making styles. As companies make decisions about customer strategies, they look to customer measurement to help influence specific decision makers or the decision making process or validate initial ideas about how to manage customer relationships.

These styles break down into five categories:

Hard ROI approach	In this approach, companies develop a return-on-investment model that seeks to deliver actual cash benefits to the company. These approach identifies cost savings, provable productivity improvements, or well-tested revenue generation opportunities.
Intangible benefits/assets	In this approach, so-called softer benefits or intangible assets are identified and quantified. For example brand equity or knowledge capital are two forms of intangible assets that companies do try to measure and quantify and correlate to future company performance.
Competitive assessments	This approach measures how competitors are interacting with customers and decisions are made to either seek parity or exceed a competitor's capabilities.
Value-driven	This approach measures economic value delivered to and/or derived from a customer. This style involves building a model of customer value exchange.
Instinct and experience	This approach uses manager's individual experiences and intuitions about what CRM solutions to execute that may or may not be informed by additional facts.

Many companies frequently adopt more than one style. The styles adopted, consciously or not, shape how the company will measure customer activity. The company's business model, approach to the market and history of measuring customers also influences which of the measurement styles seem more appropriate or expedient for the company.

Guiding ongoing activities

CRM measurement frameworks are not only used to help managers collectively formulate plans and make decisions, but they are also used to inform and guide ongoing daily activities related to customers. This is related to but somewhat different from influencing decision-making. Measuring customer activities not only helps companies decide which customer strategies to adopt, but also helps front-line employees and managers perform regular tasks. Often, this is the predominant focus for CRM measurement systems. For example, for those businesses with call centers, managers frequently run reports from the call center technology systems, such as automatic call distribution (ACD) systems, on how well the call center is performing and if customers are being serviced at the prescribed level. If managers see problems with performance, those problems can be diagnosed and resolved.

Depending on the company's business model and the business unit within the company, these measurement frameworks vary. Some categories include:

1. Brand performance measures
2. Customer asset management
3. Customer behavior
4. Marketing performance
5. Sales force performance
6. Service center performance
7. Field service performance
8. Supply chain and logistic performance
9. Web site performance

Since a company interacts with customers through a variety of different business units in a variety of methods, each business unit measures customers very differently. The way a brand manager measures its customer-facing activities is very different from the way the field service staff may measure its customer-facing activities. It is this different way of "touching the elephant" that contributes to a company's inability to deliver on the promise of CRM systems. Given the diverse nature of these measurement frameworks, it is not surprising that CRM practitioners are often skilled in one measurement framework and unaware of the issues, complexities and importance of the other frameworks.

Specific measures in each of these measurement frameworks can be focused internally towards company employees and productive processes that generate and deliver products and services or externally towards customers and their behavior. For example, a call center frequently measures the cost per call as a measure of economic productivity. This is an internally focused measure. Call centers frequently survey customers to determine the level of customer satisfaction. This is an externally focused measure. Figure 1 depicts these measurement orientations.

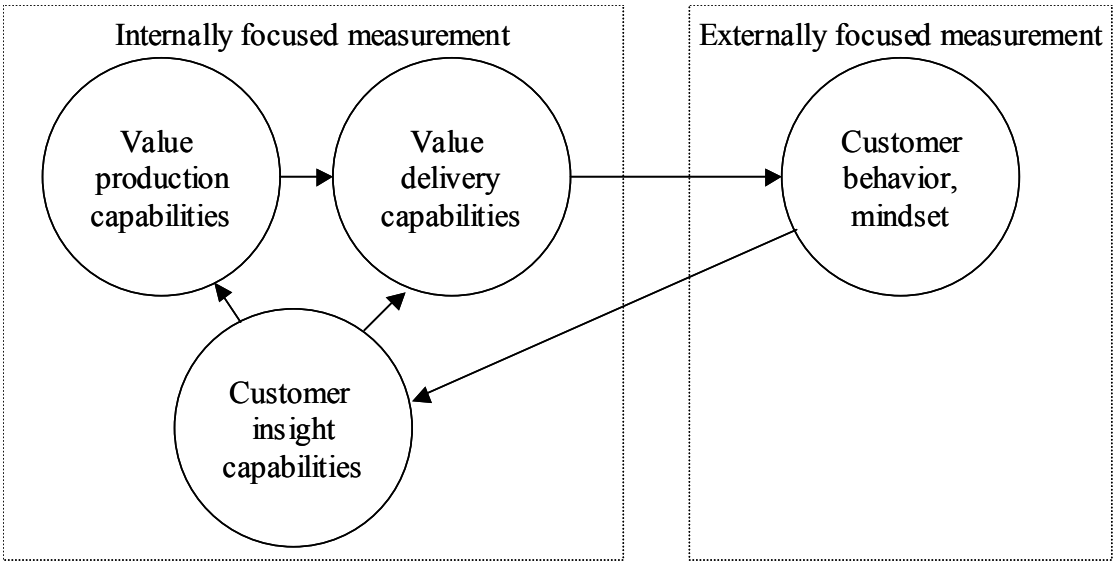

Figure 1

In this figure, products and services originate in the company's value production capabilities and then flow through the value delivery capabilities and to the customer. The company's customer insight capabilities must collect knowledge about the customer's behavior and mindset and inform the value production and delivery capabilities. While companies frequently measure customer value production and delivery capabilities, very few measure the customer insight or knowledge management capabilities. Very little has been written on how customer knowledge management capabilities can and should be measured.

What makes CRM measurement difficult is that the measurement problem is not confined to just measuring customer behavior and mindset. Instead, businesses need to measure activities that occur inside the company, too. CRM measurement also sometimes goes beyond measuring those activities that directly touch the customer (value delivering capabilities). Companies frequently need to measure specific attributes about how a product or service is produced (value production capabilities), especially if the product or service is customized for the customer. Value production capabilities extend through to suppliers and partners. Hence CRM measurement may also involve supply chain management activities. In fact, supply chain management, as a discipline, exists to better deliver value to customers and therefore is often a key component in CRM activities.

When it comes to coordinating customer-facing activities, the level of interconnectedness within companies and within value chains can be surprisingly high. In the retail consumer packaged goods (CPG) industry, when a grocery store chain changes its consumer promotion schedules, at least seven groups within a CPG firm are impacted: sales, marketing, trade promotions, warehouse, transportation, manufacturing and finance (Rubin, 2001). Rubin reports the lack of coordination costs manufacturers $100,000 in lost revenue per promotion. Collaborative supply chain tools, planning, forecasting and replenishment applications, address these issues and all are heavily dependent on customer insight capabilities within each company in the value chain to work.

When CRM measurement is looked at in this way, one can get the impression that CRM is too wide of a discipline and a technology set since it encompasses nearly every aspect of a company. While this is true, that is because companies exist to sell to and serve customers and it is natural that a wide set of measurements would need to be managed. Companies also have to manage all sorts of measures and measurement frameworks that customers are typically not interested in, such as stock price volatility, bank financing interest rates, overall accounts receivables days sales outstanding and so on. So where

does CRM measurement begin and end? One way to answer that is to say that CRM should measure those company activities that pertain to or can benefit specific customers as well as specific customers' behavior and mindset.

Measuring strategic capabilities

CRM measurements can play a significant role in measuring portions of corporate strategy. While customer measures are discussed in the balanced scorecard literature, most CRM measurement approaches involve far more metrics at a lower level of abstraction than those represented within a balanced scorecard. However, as companies continually review and reformulate their customer strategies, CRM technology solutions now allow digital execution of those strategies. Technology serves as a mechanism for quickly generating customer measurement data. Figure 2 depicts the relationship between tactic execution and data collection and customer strategy review and reformulation.

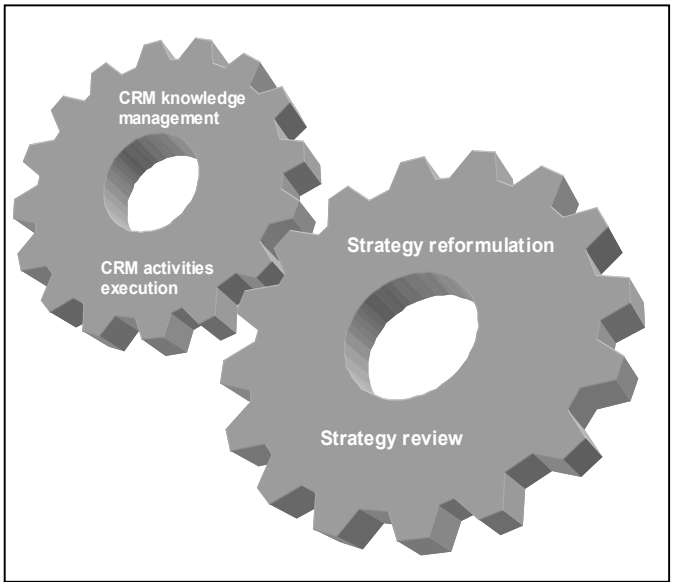

Figure 2

Not only is the mechanism for creating customer knowledge not typically measured, so too are the mechanisms for generating customer strategies. While CRM measurements can and do measure the outcome of these strategies and serve as leading indicators for future corporate financial performance, they can potentially be extended to measure how frequently and accurately customer strategies are reviewed and reformulated. Specific CRM tactics can be linked to the strategic process that spawned them. This linkage can be used to "score" the strategy generation capabilities.

Predicting future states

Companies have a need to use CRM technology to help anticipate customer needs or otherwise predict a future customer or market state. Within marketing, there is a long history of using predictive modeling techniques to test out potential marketing approaches to determine how successful the program will be in advance of launching the entire program. CRM technologies and approaches are being used to help companies improve the design of existing products and build new innovative products through closer collaboration with customers. Digital technologies let companies engage customers in a less costly and highly measurable dialog

As more companies and value chains adopt CRM technology and as the technology gets more robust, companies will be able to capture a fairly comprehensive set of data representing the behavior of a market. This information gives these companies clearer insight into what direction their market and customers are headed. From there these companies can determine how to shape or adapt to their changing market conditions. While specialized companies like ACNielsen and IRI are information companies that capture consumer insight and resell it to companies at different points in an industry's value chain, more companies will be able to "go it alone" and develop comparable capabilities themselves. General Mills now conducts 60% of its market research themselves on the web, up from 20% in 1999 (Ashton, 2001).

Doing so carries strategic significance. The type of dialog between the company and its customers can get increasingly tailored to the company's brand and value proposition for proprietary competitive advantage.

Companies use CRM technology to help predict future states in other ways. Gathering customer insight to drive product or service innovation can take many forms, from well-controlled research experiments and surveys to more collaborative and ethnographic approaches. All of these approaches collect data that can be structured and measured. For more traditional CRM system implementations, companies frequently pilot the solution within a single business unit or customer segment (or a small part of a customer segment) to determine if the program will be successful before being rolled out to the entire company or market.

CRM complexity

To summarize, several factors have conspired to make CRM measurement increasingly complex:

1. The appearance of many different digital channels to exchange information with customers
2. The ability to distribute all or parts of the product/service bundle through digital technologies
3. Business unit silos causing differentiated and disconnected technologies and human processes
4. Product silos causing differentiated and disconnected technologies and human processes
5. Increased data and process integration between companies within a value chain
6. Differing styles of customer decision-making approaches
7. Differing CRM measurement purposes: influencing collaborative decision-making processes, guiding ongoing activities and predicting future states

The challenge for businesses is to weave together a CRM measurement approach that deftly handles these complexities and constraints.

CRM Measurement Frameworks

As discussed earlier, how a company measures its CRM activities depends on who is doing the measuring and what activities are being measured. Below are the common CRM measurement frameworks that both experience and literature review suggests:

1. Brand-building
2. Customer equity building
    a. Customer behavioral modeling
    b. Customer value management
3. Customer-facing operations
    a. Marketing operations
    b. Sales force operations
    c. Service center operations
    d. Field service operations
    e. Supply chain and logistic operations
    f. Web site operations
4. Leading indicator measurement
    a. Balanced scorecards
    b. Customer knowledge management

Brand-building

The goal in brand building is to carefully manage a company's name, brands, slogans and symbols, otherwise known as brand equity. Various models (and criticisms) of brand equity have been published over the years. The main challenge lies in how to quantify this important intangible asset. David Aaker (1991) breaks down brand equity into the following components:

Brand loyalty	This is a measure of the attachment a customer has to a brand. How likely is a customer to switch to another brand?
Brand awareness	This is the ability of a potential customer to recognize or recall a brand as a member of a product category.
Perceived quality	This is the customer's perception of the overall quality of a product or service with respect to its intended purpose and considering alternatives.
Brand associations	This is anything that is linked, in the mind of the customer, to a brand. The association also has a level of strength. An association can be a celebrity or person, a life style, a geographic area, various product attributes, some customer benefit, a particular application or use and any other intangible concept.

Brand loyalty can be measured quantitatively in a number of ways. So can brand awareness through surveys and interviews. Many qualitative techniques are used to generate measures for perceived quality and brand associations.

Companies can look at brand building as if they were managing an asset. Brand equity can be calculated by removing from operating earnings attributed to a brand the cost of capital, taxes and risk and then determining the value of the remaining number as a discounted cash flow extending out five or more years (Schultz, 2001). By treating brand value as an asset, investments in brand building can be measured and more easily compared with other corporate investments, the value of the brand and the performance of the investments can be tracked and the performance of specific brand activities can be monitored. Measuring brand value can get complex. Boston Consulting Group's brand value creation (BVC) approach looks at dozens of variables concerning different aspects of a brand and various competing brands and determining how significant each variable is to the brand's value (Bixter, et.al., 1999). This approach uses cross correlation analysis, cluster and factor analysis and linear regression to build the brand value model. The authors state that this approach helps companies understand what consumers value most and how well brands deliver it.

Complexity also lies within each brand equity component Aaker describes. Brand awareness has been discussed in depth over the past 40 years yielding plenty of measures such as brand awareness (unaided and aided), brand recall, purchase intention, brand preference and willingness to pay. In addition, brand equity components have relationships between each other. For example, high brand awareness can positively affect perceived quality (Hoyer & Brown, 1990). Brand equity as a measurement framework can also encompass traditional and easier to determine measures such as market share, sales volume, the number of customer inquiries, customer and customer retention, among others. Many managers eschew the more formal and rigorous brand equity measures in favor of measures that are more easily derived (Macdonald & Sharp, 1996).

Davenport and Beck (2001) suggest a different way to think about company or brand awareness. Their technique, called the AttentionScape, helps managers understand what kind of attention they are getting from customers (or employees, suppliers, etc). Data is collected through survey techniques and plotted along three scales:

1. Front of mind / back of mind attention
2. Voluntary / captive attention
3. Attractive / aversion attention

Competitors can be plotted along these axis and companies can develop strategies to reposition themselves relative to their competitors' attention profile.

Customer Equity Building

Recently much has been written about the benefits of looking at customers as the key asset, rather than the brand as the key asset. Companies have historically measured products and brands and focused on eliminating unprofitable products from their portfolio. This approach, while seemingly a correct one, fails to account for the multi-product effect on customers and can actually cause a "profitable product death spiral" in which weeding out unprofitable products causes initial customer defections, which causes additional products to become unprofitable, which causes further elimination of unprofitable products and so on (Rust et al., 2001*)*. Rust et al. argue for changing the focus from unprofitable products to unprofitable customers.

With the customer as the primary unit of analysis, the CRM literature suggests two frameworks: understanding how customer equity links to business value and understanding how customer behavior works and is linked to parts of the overall customer equity. The first framework is a management framework for linking various customer-facing activities in a reasoned way to overall customer equity and business success. The second framework is a marketing research framework that seeks to understand how customer behavior is influenced by a company's customer-facing activities.

Customer value management

Different approaches exist for measuring customer value. Four approaches are considered here: customer equity management, customer value analysis, loyalty monitoring, and customer satisfaction. While customer equity management, as described by Rust et al. in 2001 is perhaps the most encompassing of the approaches, each of these approaches has a history of research and literature behind it.

Customer equity management

Rust et al. identify three main components to customer equity:

Value equity	The customer's objective assessment of the utility of the brand, with quality, convenience and price satisfaction as key components.
Brand equity	The customer's subjective and intangible assessment of the brand beyond its objectively perceived value. Key components include the customer's awareness of the brand, customer's attitude towards the brand and how the customer perceives the brand's social ethics.
Retention equity	The customer's tendency to stick with the brand above and beyond the

customer's objective and subjective assessments of the brand. Key components include loyalty, special recognition, affinity, community and customer knowledge-building programs.

Each of these areas of customer equity require measurement and the authors identify some preliminary drivers of each area of equity that can be measured.

Customer Value Analysis (CVA)

Much has been written about customer value analysis (CVA), which was devised by Bradley Gale and utilized by Ray Kordupleski at AT&T. CVA compares price and quality (or value) of a product against competitors. The purpose of this analysis is to determine how changes in price, value or quality can affect market share and as such, this framework provides a linkage between a company's customer facing activities with overall corporate performance. One form of this analysis compares two competitors in a grid with two axes: relative cost and relative product and service quality.

Since each product or competitor's scores for price (relative competitive price or RCP) and quality (relative total quality or RTQ) are expressed as relative percentages (for example, between 90% and 110%) of each other. If one company changes price or quality in its product, the position of both company's products will change on the map. In essence, this map tries to show how customers perceive the product relative to a competitor and how price and quality perceptions will affect their choice in purchasing (Gallagher & Kordupleski, 2000). Most of the analysis work is in determining the components to quality, although depending on the product and category, price can have several components that require analysis as well. When performing this analysis, perceived price (or price satisfaction) and perceived quality are the key measures versus actual price and quality. Surveys are a primary means of capturing CVA data. Frequencies and sampling can vary depending on how dynamic the customer base and competitive environment are and how frequently internal processes within the company change.

CVA fits inside of a comprehensive framework call Customer Value Management (CVM). CVA is the information component of customer value management (APQC, 2001). CVM has a strategic component that helps companies answer 4 basic questions:

1. Where are we now?
2. Where do we want to go?
3. How do we want to get there?
4. Are we there?

CVM also has a continuous improvement component or an operational component that helps companies understand the root cause of delivery failures, improve the value delivery systems, enhance team development across all improvement initiatives and establish customer recovery or intervention programs to keep and enhance profitable customers and shed unprofitable ones. The APQC identifies 4 basic steps for establishing and monitoring a CVM measurement system:

1. Identify strategic priorities in the context of customers and products.
2. Conduct qualitative research to get a comprehensive understanding of the ways customers think about value
3. Conduct surveys that will provide data for analysis so that the company can determine what from the customer's perspective are the 3-4 key benefits of the 10 or 12 benefits for each product. These surveys need to be specific to customer segments.
4. Monitor the value proposition with a limited subset of questions.

CVM proponents feel the method addresses limitations within the customer satisfaction survey approach. According to the APQC, customer satisfaction scores lack linkage to key internal performance metrics and may be unrepresentative of how customers really evaluate product and service purchase decisions. The customer satisfaction framework is older and widely adopted in North America while the customer value framework is newer and being adopted by leading edge companies (Gale, 2002). Gale positions CVM as the latest evolutionary version of voice-of-the-customer initiatives with conformance quality as the first followed by the customer satisfaction and then the customer loyalty paradigm.

Loyalty monitoring

Frederick F. Reichheld's writings on loyalty (not just customer loyalty, but employee and shareholder loyalty as well) are widely cited with the CRM world as a framework for measuring the effect of customer-facing activities. This measurement framework helps companies look at the customer base along a longitudinal axis. The central notion is that if a company can cause fewer customer defections, the long-term effects on company performance would be significant. Customer loyalty data, then, serves as a predictor of financial performance. For example a 5% increase in customer retention rate can have between a 30% and 95% impact on customer net present value and a similar impact on corporate profits (Reichheld, 1996).

To perform the analysis discussed in Reichheld (1996), companies need to collect defection data, sales data and gross profit, marketing and expense data in a way that can be attributed to customers. This data needs to be analyzed by *customer cohort* (grouping customers into periods of acquisition. For example, all customers acquired in 2002 would be in the 2002 cohort and reported on). This type of analysis helps identify and manage loyalty problems pertaining to a specific acquisition period. Customer-facing activities can then be tailored to customers based on their loyalty.

Reichheld offers two key loyalty measurement documents: a customer balance sheet and a customer value flow statement. The balance sheet looks like this:

Customer category	**Number**	**% of Revenue**	**NPV**
Beginning Balance			
+ New customers			
+ Gainers			
- Decliners			
- Defectors			
Ending Balance			

The term *new customers* refers to customers acquired. The term *gainers* refers to customers who bought more in this period. *Decliners* refer to those who bought less and *defectors* refer to customers who left. The customer value flow statement captures the following information about a company's customer and some of its key competitors:

Price	Quality drivers	Retention
Share of wallet	Gain	Yield
New customer NPV	Current customer NPV	Defector NPV
Average profit per customer	Average revenue per customer	

The gain rate is the ratio of new customers to the current customer base. The yield rate is the percentage of customers who actually convert to buyers, or sign up. As do Rust et al. (2001), Reichheld discusses the

use of an acquisition/defection matrix that shows how many customers defect from one company's brand to another.

To collect defection data, understand what are the components of quality and service from a customer's perspective, and enumerate which measures will represent the company's value proposition's success (in addition to the measures discussed here), requires ongoing customer surveying and other qualitative research techniques with their concomitant data collection approaches.

Customer satisfaction

For the past several decades, businesses have been determining customer satisfaction to help improve their customer-facing activities and predict and improve financial performance. Customer satisfaction, then, is an antecedent to some form of loyalty behavior. Customer satisfaction has been defined as a "satisfactory post-purchase experience with a product or service given an existing pre-purchase expectation," (Vavra, 1997).

Vavra (1997) offers a model for customer satisfaction in which satisfaction is an antecedent to repurchase behavior and has several antecedents as well. The most important antecedent is prior experience that "serves as a 'memory bank' of all the previous experiences with a product or service." Several factors can influence prior experience, such as the customer's demographic characteristics, their level of personal expertise, the nature of the competition, advertising and PR influences, and the evolution of technology. Along with prior experience, customer desires and expectations, the perceived product or service performance and ease of evaluating that performance are all antecedents to a mental process customers go through to compare what was expected and what was delivered. This "disconfirmation/confirmation/affirmation" process, in which expectations are not met, met or exceeded can be visualized as a sigmoidal function (Vavra, 1997). As "perceived performance exceeds expectations, satisfaction increases but at a decreasing rate." As performance falls short of expectations, satisfaction decreases at a faster rate than it does for exceeding expectations (Vavra, 1997).

Following Vavra's model, satisfaction is an antecedent to repurchase behavior, but the relationship between the two is mediated by several factors including the industry structure and life cycle, switching barriers, channel structure, complaint management and relationship management. Within this model are a host of measures companies need to collect. Before data collection can be done however, the company must design a survey instrument. The challenge is to formulate a customer satisfaction survey that balances internal company-process issues with external customer needs issues. When designing this survey, companies can use a variety of qualitative data collection techniques to determine the product or service characteristics and attributes to survey. Once designed, surveys are distributed through a variety of channels: face-to-face, mail, fax, e-mail, web and phone. Standard data analysis and data mining techniques are then employed to understand the represent the survey data.

The linkage between customer satisfaction and financial performance is often cited as the weak link in the customer satisfaction discipline. Attempts have been made to resolve this by linking customer satisfaction with some notion of product or service quality and customer loyalty and retention. A model for doing that is pictured in Figure 3.

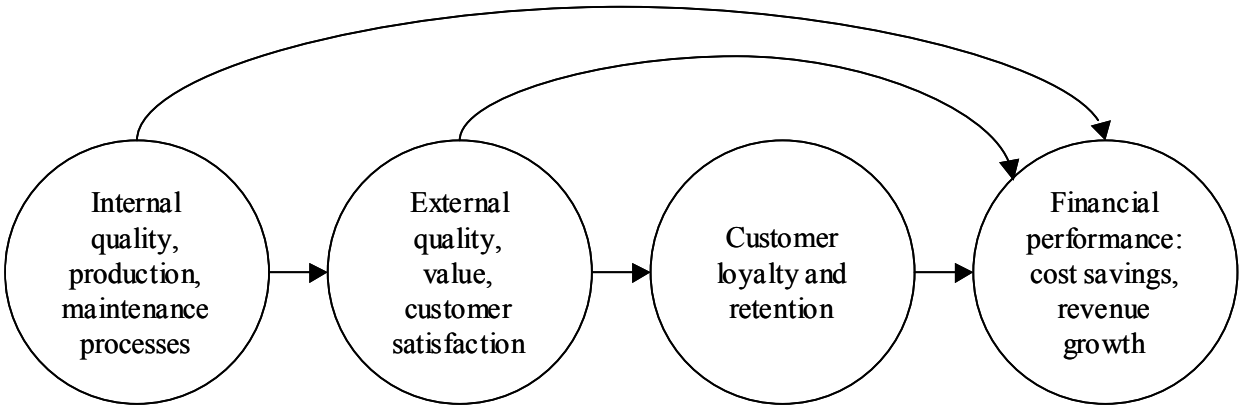

Figure 3. Source: Johnson & Gustafsson (2000).

To implement this financial causal model, Johnson & Gustafsson (2000) argue for a cyclical process that starts with identifying the overall purpose (strategy and planning), moves to building the "lens" of the customer (qualitative research), which moves to building the quality-satisfaction-loyalty survey which moves to performing data analysis which then moves to making decisions before starting all over again.

Others have also linked customer value analysis concepts to customer satisfaction to address some of the inherent limitations in the customer satisfaction paradigm (Woodruff & Gardial, 2001). Woodruff & Gardial list the following differences between the paradigms:

- Customer satisfaction is a reaction to value received. Customer value determination tries to capture the relationship between the product, the user and their goals in a specific use situation. Satisfaction measures the gap between expected and actual product performance. Satisfaction measures and customer value determination complement each other.

- Satisfaction measures are historical. They measure what has been delivered. Both the customer value paradigm and the customer satisfaction paradigm build out, through qualitative techniques, a model of how customers perceive value. The satisfaction paradigm applies to model to value that has been delivered. The customer value paradigm is not tied to post-delivery measures. Customer value can be measured before, during and after consumption whereas satisfaction is measured after consumption.

The problem with many implementations of satisfaction surveys is that what is being measured are attributes of a product from a company's perspective rather than how the customer arranges their hierarchy of values in the context of specific use situations. This can cause companies to be measuring correctly but measuring the wrong thing.

Researchers and practitioners within the CRM, marketing and customer satisfaction circles have argued among themselves as to which approach: loyalty, satisfaction, value, quality or some other attribute is what matter most. The CVA crowd looks at CVA and CVM as the successor to the customer satisfaction paradigm. Customer satisfaction practitioners have expanded their model to resemble the CVA/CVM model. In some respects, the debate is pointless, since nearly every paradigm tries to establish a sequence of causal relationships at three levels:

1. Company behavior towards customers
2. Customer behavior in total (including factors outside of the company's direct control)
3. Financial results derived from changed customer behavior

The debate is about how to arrange the various nodes in the influence diagrams to model, more accurately, the causal linkages. The risk in all measurement paradigms is not so much inaccurately measuring, but in measuring irrelevant things.

Customer behavioral modeling

Embedded within brand-building and customer equity measurement frameworks is some form of a customer behavioral model. These models try to explain one or more customer behaviors by describing the antecedents on that behavior and the level of influence each antecedent has. The reason customer behavioral modeling is discussed separately here is that the market research literature is rich with studies that do not necessarily try to tie customer behavior to financial performance or company responses. Instead, the research simply wants to understand customer behavior better more or less removed from specific company goals, objectives or performance. In addition, researchers are focusing on new concepts to link to customer behavioral loyalty.

An example of this kind of model with its appropriate measurement issues is shown in Figure 4. Here the authors (De Wulf et al., 2001) are probing how different relationship marketing tactics impact customer perceptions of relationship investment by the retail company. Through predominantly qualitative techniques, including surveys, interviews and focus studies, the authors established measures and collected data to understand how each of the relationship marketing tactics did or did not affect purchase behavior.

While this example is very research-oriented, companies can use these kinds of measurement techniques to understand customer loyalty behavior in depth. This detailed level of explanation can be useful for critical customer interactions, especially where the type of product, service or customer experience is unique to the company and no relevant research is applicable.

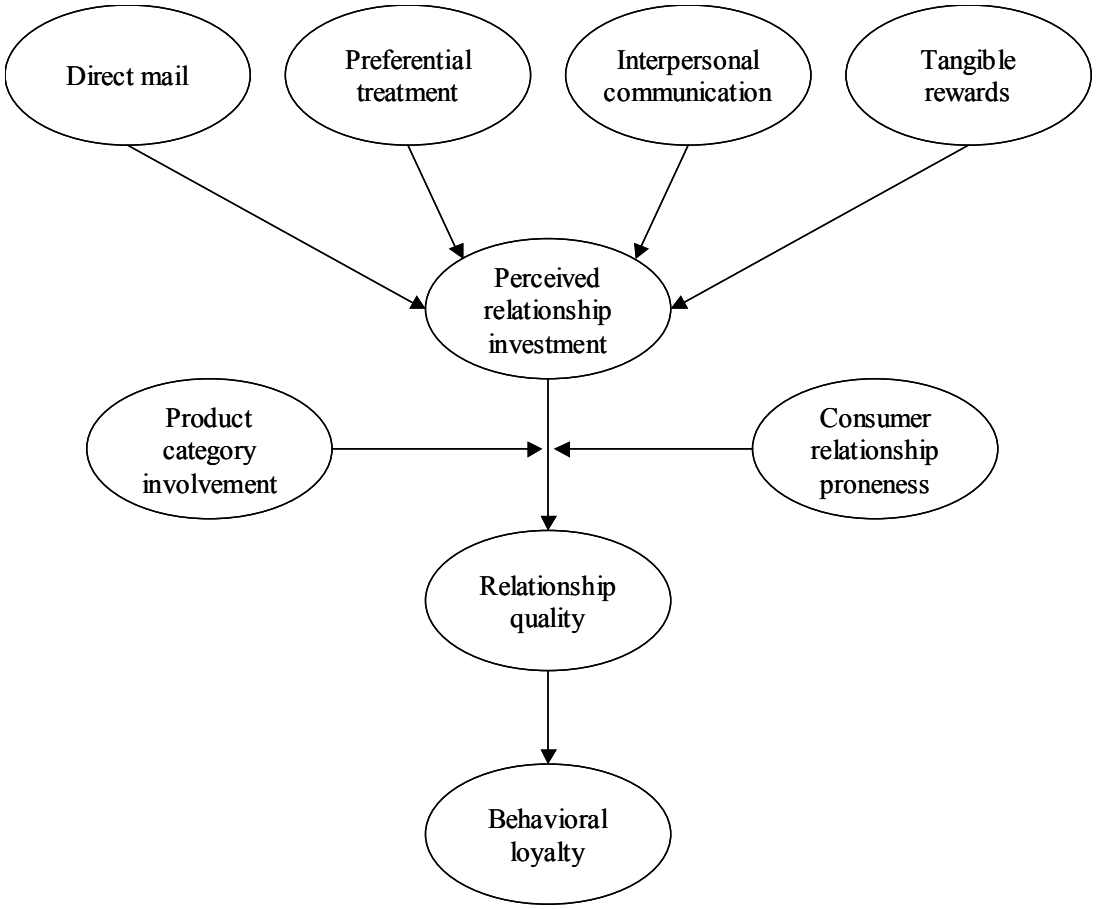

Figure 4. Source: De Wulf et al. (2001)

These types of measurement frameworks abound in the academic literature and are usually cloaked in veils of secrecy within the few companies that perform this type of research. The vast majority of companies, especially mid-sized and small companies, never go to this level of analysis to understand customer behavior. This measurement framework requires a robust qualitative research capability that is refreshing the data and revising the behavioral model frequently as markets and customer behaviors change.

Customer-Facing Operations

Most, if not all or traditional CRM and customer transaction software, collect all kinds of basic data regarding customer facing activities. These operational CRM systems automate customer facing activities and in doing so, collect information on employee and customer behavior. For most companies deploying CRM technology, these are the only kinds of CRM measurements they make.

Marketing operations

Software that manages marketing operations lets companies plan, schedule, execute and track their marketing campaigns. Several key metrics from the marketing automation function include:

Reach How many potential customers have been reached by the campaign.

Response rates	What percentage of the total campaign population responded to the campaign.
RFM	Stands for recency, frequency, monetary value. This is a calculation for scoring a customer based on past behavior. The recency of past interactions (purchases), the frequency of that type of interaction and the monetary value of those interactions are added together, with specific weighting applied. This composite score is used to predict likely involvement with a campaign.
Conversion rates	What percentage of the total campaign population bought something or completed an activity (enrolled in a sweepstake, for example) as a result of the campaign?
Customer acquisitions costs	How much did the company spend to acquire a new customer?
Average customer interaction costs	The total cost for interacting with a customer as part of a campaign divided by the number of interactions. Useful for comparing costs of interacting with customers across multiple media.
Attrition, churn	How frequently do customers terminate the relationship by opting out, stop purchasing or choose a competitor.
Share of wallet, share of requirements	How much of the customer's total budget for purchases within a product category do they make with a company.
Average order size	The average amount spent by a customer per order. Many companies have goals of increasing average order size through marketing.
Category involvement	The amount of money a customer spends or interest a customer shows within a product category. Customers with high involvement in a product category frequently buy more than those with low involvement.

Sales force operations

This CRM area is perhaps the most mature. Companies have been deploying sales force automation solutions long before CRM became a popular buzzword. The rise of sales force automation (SFA) software parallels that of the portable and laptop computers and the handheld devices. Measurements in sales force operations focus on tracking leads as they develop into sales, measuring performance of individual sales staff members and teams, monitoring the sales performance of products, reviewing the impact training has on performance, and the cost of sales. Some measures include

Sales quota	The amount of sales each sales representative, team, product or product category has committed or is assigned to solicit.
Close percentage	This metric goes by many names. The purpose of the metric is to score a lead with a percentage that it is likely to turn into a sale. As sales personnel work with the customer to answer questions, exchange information, prepare legal contracts and so on, the percentage is changed up or down.

Customer score	Not only are leads scored, but customers are too. By scoring a customer, companies can develop a model that helps them predict which customers are likely to purchase their product or service. Many attributes (size of the company, geographic location, level of access into the company, level of cultural, industries the customer serves, size of budget for the solution being sold) can go into scoring a customer. In this regard, customer scoring is similar to a segmentation exercise. However, many sales teams score customers within a segment and the scoring is often subjective.
Sales expenses	This metric includes all expenses related to the sale, such as travel, entertainment, printing, shipping, use of other internal resources, 3rd party expenses, etc.
Close rate	The percentage of sales leads that convert to sales. This is often tracked at the sales representative, team, customer segment and product/product category level.
Sales totals	The total number of sales represented by all leads. This metric is often multiplied by the close percentage for a weighted sales leads number. This metric is used to predict future sales.
Sales lost	The number (or percentage) of sales lost, broken down by reasons, which can include loss to a competitor, loss of customer funding, and many other reasons.
Training impact	Companies use different techniques to detect the impact of sales training on the sales force, including sales staff surveys on training effectiveness and comparisons in other sales metrics pre- and post-training.
Cross-sell rate	The percentage of sales totals that include items that were not specifically requested but recommended by the sale force or through marketing.
Number of calls	The number of calls made by a sales representative or sales team. This can be broken down by new account calls and existing account calls.
Number of new customers	How many new customers have been added during a period of time.

Service center operations

With the increased use of phone technology to handle incoming phone calls and manage outbound sales calls, companies have long housed those resources into a single functional group called the call center, service center or interaction center. Much has been written about call center and service center operations, revealing a host of measures (Anton, 1997), some of which are listed here.

Call counts and duration	The number and duration of calls either received or sent, often broken down by call type, which is input by the call center representative after completing the call.
Average hold time	The amount of time a customer has to wait before being served by an agent.
Abandonment rate	The number of calls abandoned expressed as a percentage of the total calls. These are customers who hang up while waiting for an agent or get disconnected.

Average abandonment time	The average time a caller waited before abandoning the call.
Adherence	The amount of time the agent is "in their seat" ready to take calls, expressed as a percentage of the total time the agent is scheduled.
Wrap-up time	The amount of time, after the call is completed, the agent needs to complete administrative tasks related to the call.
Average cost per call	The sum of all costs for running the center divided by the number of calls received.
Average talk time	The amount of time the agent spends on the call talking to a customer.
Average handle time	The sum of the talk time and the wrap-up time.
Agent utilization	The amount of time agents spend on calls versus other internal tasks, expressed as a percentage of available time.
Blocked calls	The number and percentage of calls that receive a busy signal and could not even get to the automatic call distribution system (ACD).
Service level	A goal for call center performance. A widely used format for the goal and values is for a call center to answer 80% of the calls within 20 seconds.
Call quality	Companies have devised ways to monitor the quality of a call and the agent's abilities. Scores can include vocal intonation, friendliness, promptness, knowledgeableness, and adherence to procedures.

With the heavy emphasis on internal metrics associated with call efficiency, companies have instituted balanced call center reporting that combines efficiency scores with effectiveness scores (like call quality).

Field service operations

Field service operations include a host of post-sales activities, including: warranty and service contract management, scheduling and dispatching field service agents, service call routing for inside service, problem tracking and resolution management, service inventory management, managing the logistics of part fulfillment and replenishment. Measures are less standard than call center measures but can cover a wider variety of areas.

Response time	Amount of time it takes a service agent to respond
Completion time	Amount of time it takes a service agent to resolve a customer's problem.
Repair fulfillment time	The amount of time it takes to deliver a requested part or service needed for a repair.
Service level	This metric is similar identical to the call center metric when applied to inbound phone calls. It includes additional measures when applied to all support calls.

Customer satisfaction score	Many companies routinely survey their customers after a service call to verify satisfaction.
Service call priority	Service calls are frequently prioritized to comply with service contracts or warranty terms or to indicate the importance of the request.

Supply chain and logistic operations

Frequently discussed as separate and distinct from CRM, supply chain management and logistic functions are significant areas of interest for CRM practitioners. Customers consume physical and digital products. How quickly and efficiently these products flow through the value chain is of importance, especially when the time it takes a product to be delivered is a key component of improving customer satisfaction and driving customer value. As more products allow for mass customization, more of these measures will be tied to specific customers. While most of the measures within supply chain operations and systems refer to suppliers, some of these measures may have applicability for understanding customer behavior. Some of these measures include:

Fill rate	The number of items ordered compared with items shipped. Fill rate can be calculated on a line item, SKU, case or value basis.
On time ship rate	What percent of orders where shipped on or before the requested ship date. On time ship rate can be calculated on a line item, SKU, case or value basis.
Performance to promise	What percentage of orders where shipped on or before the promised ship date. In some cases, some items may be on back order or delayed for whatever reason. This metric captures the overall conformance with promised ship dates.
Backorders	The number (or percentage) of unfulfilled orders.
Customer order cycle time	The average time it takes to fill a customer order.
Cash to cycle time	The number of days between paying for raw materials and getting paid for the product by the customer.
Supply chain cycle time	The total time it would take to satisfy a customer order if all inventory levels were 0.
Perfect Order Measure	The error-free rate of each stage of an order. Error rates are captured at each stage (order entry, picking, delivery, shipped without damage, invoiced correctly) and multiplied together.
Upside flexibility	The ability of a supplier to meet additional demand requirements

Web site operations

With the advent of the Internet, companies have launched web sites for a variety of purposes including, marketing, sales and support. Because of the heavy use of marketing on the Internet, web site operational measures include many marketing operations measures. Some are:

Visitor count	How many people have visited a web site.
Unique visitor count	How many unique people have visited a web site. This measure does not double-count users who visit a site multiple times in a period. Web sites can have difficulty in accurately determining unique visit counts, especially for those visitors who have chosen not to identify themselves by not registering with a site (anonymous users), visitors who use multiple machines to visit a web site, and visitors who disable cookies in their browser preventing the system from anonymously identifying them.
Page hits	How many pages have been downloaded from a site, or how many times a single page has been visited in the site.
Duration	Total time a visitor spent on a page or a site.
CTR	Click-through rate. What percentage of visitors clicked on a banner ad or other form of internet marketing to visit the advertised web site.
Impressions	How many visitors viewed a page that contained an advertisement of some kind.
Registered users	How many visitors registered with the site.
Breakage	What percentage of visitors started interacting with a site (for example, by starting a survey or purchasing a product), but chose not to complete the interaction.
Click stream	Not a measurement per se, but a source of many measurements. The click stream is the sequential history of all interactions with a visitor on a web site usually stored within log files in the web server. This behavioral data is used to derive page hits, visitor counts, counts of images and advertisements viewed, etc.

Most of the measures within a web site are designed to review the health of the web site. However with the wealth of customer information embedded within the click stream data, many CRM software products include the ability to tie these measures to other off-line customer measures, such as loyalty measures, survey responses, etc.

Despite the highly measurable nature of web site traffic, many companies have significant problems with this framework. Based on interviews with 51 business-to-business and business-to-consumer web site managers at Global 3,500 firms, Forrester Research, Inc. reports three key areas of concern. One, the structure of the web site reporting doesn't lend itself well to understanding customers. Second, the measurement tool providers lag behind users needs. Third, cross-channel tracking and measurement is practically non-existent (Souza, 2001).

Leading Indicator Measurements

A leading indicating measurement is a predictor of future financial performance. Many companies look to CRM systems to provide the right leading indicator outputs so that the business can adapt to changing conditions sooner. While most of the measurement frameworks discussed can be leading indicator measurement frameworks, the two main paradigms here are either deliberately designed to be such (balanced score cards) or have no other real historical analysis use (knowledge management).

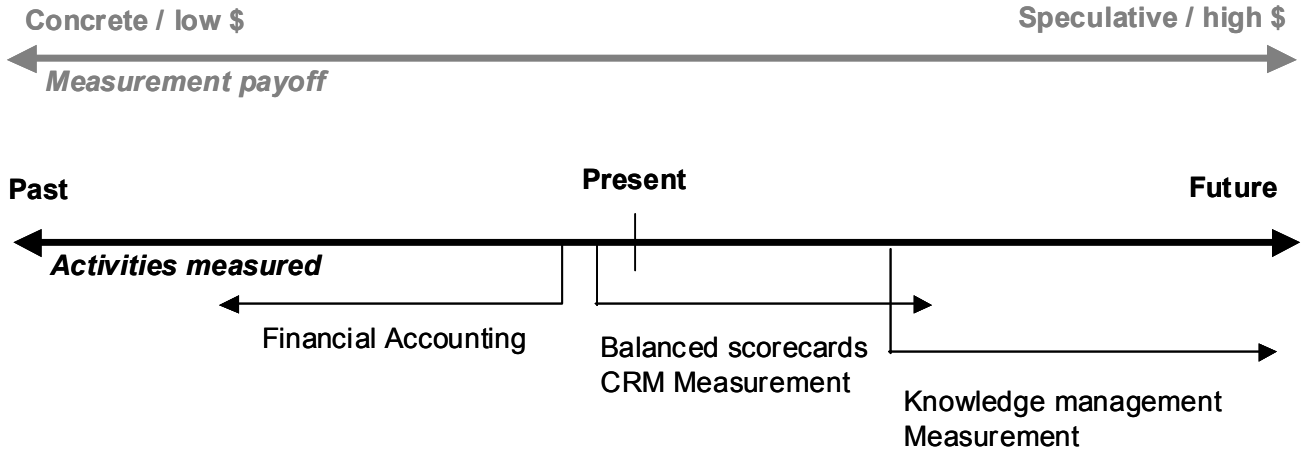

Figure 5.

Figure 5 depicts the relationship between time and payoff for measurement frameworks. Financial accounting systems measure activities that have happened in the past (e.g., last quarter's financial performance). Balanced scorecards and CRM measurement systems tend to measure activities occurring now that lead to, through the causal links identified, future financial performance. Measuring knowledge management is more speculative because the process of generating knowledge will impact activities not yet conceived.

Balanced scorecards

Introduced by Robert S. Kaplan and David P. Norton in 1992, balanced scorecards are in widespread use among Fortune 1000 companies. At the time, the authors were seeking to find a way to report on leading indicators of a business's health rather than lagging indicators, which they felt conventional financial accounting measures were (Kaplan & Norton 2001). Exclusive reliance on financial measures was causing organizations to do the wrong things. The measures included in the balanced scorecard are derived from the company's vision and strategy.

The balanced scorecard is broken down into four sections, called perspectives:

The financial perspective	The strategy for growth, profitability and risk from the shareholder's perspective.
The customer perspective	The strategy for creating value and differentiation from the perspective of the customer.
The internal business perspective	The strategic priorities for various business processes that create customer and shareholder satisfaction.

The learning and growth perspective	The priorities to create a climate that supports organizational change, innovation and growth.

Within each section, companies identify key measures and discover and map the causal linkages between measures and overall company performance. Typically, learning and growth objectives have a causal relationship with the internal perspective, the internal processes and programs. In turn, the internal perspective has a cause-effect relationship with the financial perspective (for example, if an internal manufacturing process, when changed, produces cost savings) and can have a cause-effect relationship on the customer perspective. Overall value flows upwards from the learning and growth perspective to the financial perspective. Figure 6 depicts an example of a balanced scorecard for a retail company.

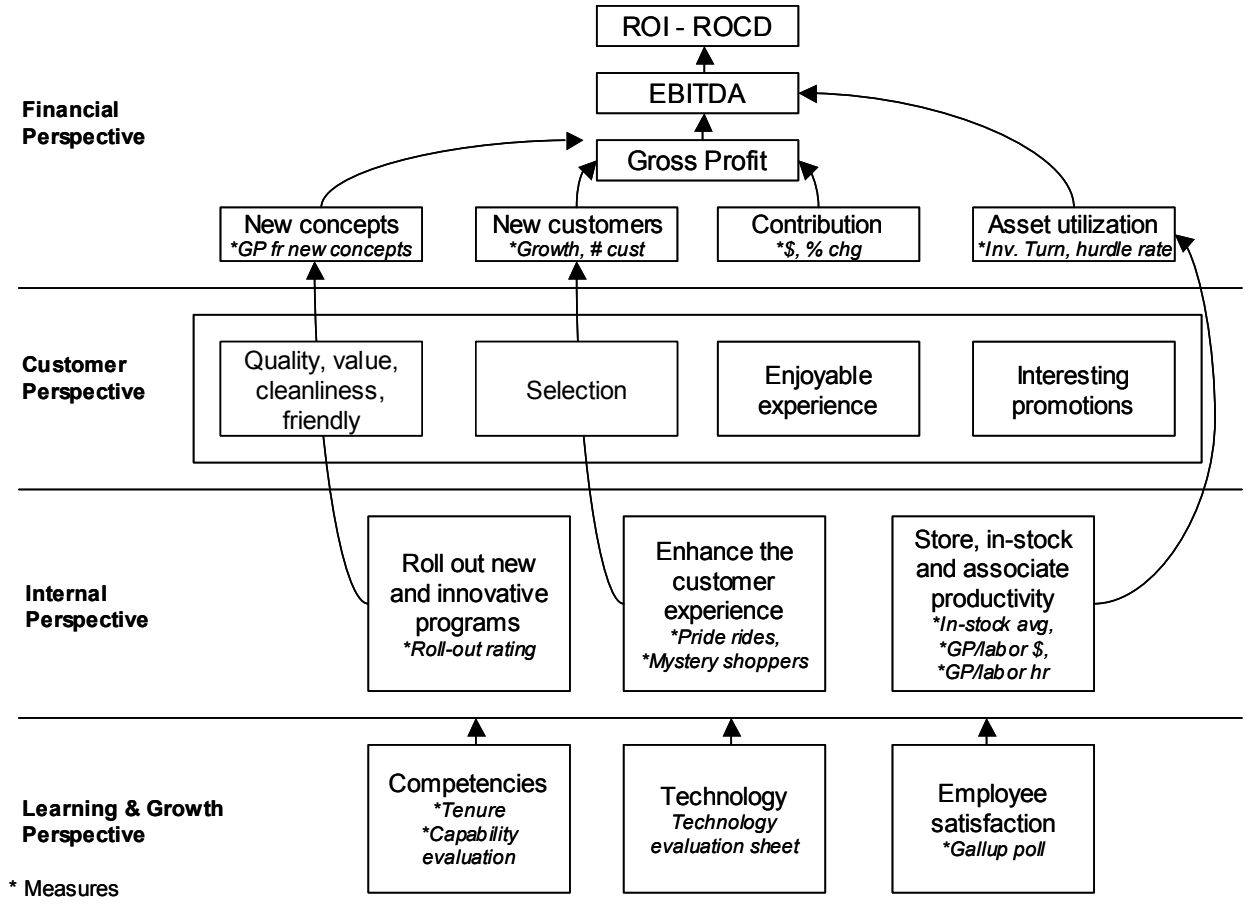

Figure 6. Source: Kaplan & Norton (2001).

CRM systems can serve as the source for data within each of the perspectives. External customer-focused measures can be used to populate the customer perspective. Internal CRM efficiency measures could be used to populate the internal perspective. CRM knowledge management measures could be used to populate the learning and growth perspective.

Despite the wide adoption of the balanced scorecard, problems exist. First, it is not always possible or it may take too long to prove through statistical means the causal linkages between perspectives and measures. Second, the scorecard is reliant on performance measures from a variety of sources that must be reliable and timely. Poor data quality or misuse of the data is diminishing the usefulness of the

balanced scorecard (Maisel, 2001). This problem is not unknown to CRM either. Gartner reports the number one reason CRM fails is that data is ignored or is of poor quality (Nelson & Kirkby, 2001*)*.

Customer knowledge management

CRM systems can collect an enormous amount of data about customers. As pointed out earlier, the inability to use that data is proving to be a big stumbling block for CRM. Interestingly, very few companies actually measure their ability to create, manage and communicate customer knowledge. One of the reasons for lack of measurement is the fact that CRM data is widely dispersed across business functions. Each function has its own interests regarding customer information and its own ways of formatting and structuring the data (Davenport, 1998). This makes it difficult to pull the data together. Davenport distinguished between several types of customer knowledge:

- Quantitative, data-driven knowledge found in transactional systems
- Knowledge derived from interactions with people including: experiential observations, comments, lessons learned, qualitative facts, etc.
- Tacit knowledge which is unstructured and difficult to express and must be converted to explicit knowledge

When it comes to customer knowledge, companies can (and a few do) measure three aspects pf customer knowledge:

1. The value customer knowledge has (intangible asset measurement)
2. The process by which it is produced and consumed (knowledge management operations)
3. The quality of the knowledge or data (data quality)

One study, conducted by APQC in collaboration with Corning, Dow Corning and Siemens AG (Lopez et al., 2001) documented examples of real-world measures used throughout the process of implementing knowledge management. The authors identified five stages of knowledge management:

Stage 1 - Enter and advocate
Stage 2 - Explore and experiment
Stage 3 - Discover and conduct pilots
Stage 4 - Expand and support
Stage 5 - Institutionalize

Measurement proved critical for stages three and four but was found present in all but the first stage. Measures in this study are asset and operational measures. Stage 2 measures pertain to interest within knowledge management and fall into three categories: anecdotal data around war stories, success stories, etc., quantitative data around the growth of the knowledge management initiative, and qualitative data extrapolated from the anecdotal data. However, in this stage companies are formulating their knowledge management strategies.

Some measures in this stage include:

- The number of sponsors recruited as champions and project sponsors
- The number of appearances in from of decision makers and the response received
- The amount of corporate funding
- The size of the gap between current state knowledge management measurement and desired state
- Measures against a benchmark

- Measures of cultural readiness

Stage 3 measures have more rigor and definition with the focus on proving business value.

Some measures in this stage include:

- Hard and soft business value derived from each pilot
- Time spent per hit (to distinguish between a quick review and rejection of data versus actual comprehension or use)
- Hits per user
- Frequency of site visits
- Percentage of total hits that are from repeat visitor
- Qualitative data concerning knowledge-sharing, knowledge value, team work, rewards, recognition and other organizational and cultural issue
- Identification and measuring of communities of practice
- Costs of capturing and creating knowledge
- Costs of ongoing knowledge management project management
- Project management effectiveness

Within stage 4, companies have adopted knowledge management within the organization and measures increase in robustness. Examples include:

- Knowledge flow in an out of a community
- Feedback (amount and quality) that flows in and out of a community
- Surveys to determine how employees value knowledge management
- Maturity measures to determine If the knowledge management process is ad-hoc or optimized

Stage 5 is a continuation of stage 4 and measures are not used to prove value. Instead they are used to check progress monitor the continued evolution of the culture.

Another approach to measuring knowledge involves measuring the flow of communications between people (Krebs, 1998). "An organization's data is found in its computer systems, but a company's intelligence is found in its biological and social systems," he argues. Kreb's approach involves using surveys and observation to uncover the formal and informal communication links between people and groups within a company to uncover the social links within and across the boundaries of the organization. Link frequency is scored and visually depicted in a network diagram that clearly shows the nature of the linkages.

Another way to measure knowledge management is to understand not only the production and communication of knowledge but also its consumption. Knowledge turnover (Kellen, 2001) is a term used to describe how knowledge moves between understanding and action in four distinct phases:

Perceived	Involves analyzing data, merging different types of data, building models, authoring with new information.
Plan	Involves prioritizing, communicating and developing a plan of action based on information perceived.
Act	Involves executing the plan derived from the information perceived correctly and *changing the company's behavior in the market.*

Adjust Involves measuring how much the planned execution generated had the desired effect and adjusting the execution, mid-stream if possible.

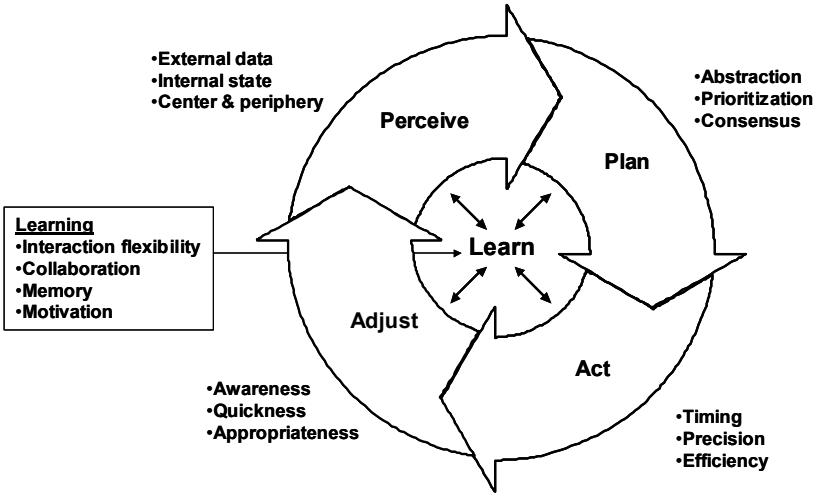

Figure 7

Knowledge is externally derived in this scheme in the perceive and adjust phase and is internally generated within the plan and adjust phases. Knowledge within this flow is communicated and retained (Figure 7). One "knowledge turnover" is the completion of one perceive->plan->act->adjust cycle. This measurement schemes quantifies the collection and use of knowledge without regard to its inherent value. However, as measurements of actions based on knowledge collect data, the indirect or direct value of the knowledge can be derived.

Implementing CRM Measurement

If one includes the full breadth of what can be measured with CRM technology and approaches, CRM measurement is frighteningly difficult. Despite the successes that are described in various books, publications, vendor web sites and CRM industry portals, no company is systematically and consistently measuring customer facing activities across the breadth and depth of the organization and customer base. In fact, recent evidence is mounting that the vast majority of CRM initiatives are failing to produce results. So many impediments, technical and human, lie ahead.

Nearly every measurement framework, at its core, relies on the principle of causality. Lower level measures "roll-up" into a higher-level measure based on some reasoned causal relationship. As CRM measurement frameworks become more complex, the causal linkages become more difficult and time-consuming to map, maintain and more importantly, to prove. Clearly some balance has to be struck between simplicity and complexity, between identifying causes and taking immediate action.

If the field of CRM measurement is complex, it is because the sum total of interactions between customers and companies are complex. If one considers this field as a region in space, or better still, an ocean, which is opaque, the problem becomes clear. In order to find fish, one needs more than one's eyes. One needs some tools to find and catch fish. The same is true for finding a region of customer behavior that would be useful to understand and exploit: one needs tools designed to find that small area of useful information in the vast opaque sea (apparent entropy). When customer behavior is fluid due to a dynamic and changing market, existing tools designed to find significant patterns of customer behavior cannot be

calibrated on old data or assumptions. The tools must evolve as the market evolves. A company's ability to perceive the market must be as fluid as its ability to adapt to or shape the market. In complex, dynamic markets, it is quite conceivable that known causal linkages between layers within a company's working theories of customer or market behavior can be invalid or worse still, be correct but irrelevant. When it comes to measuring something as dynamic as customers, most measurement frameworks need continual reassessment and recalibration.

At the other extreme are non-causal measurement schemes in which successful solutions proceed without establishing the causal linkages between related or rolled-up solutions. In some (most?) companies, this is the default approach to measuring successful initiatives. Lack of enterprise-wide coordination between various initiatives can lead to conflicting, redundant and sub optimal solutions. In this Darwinian model, however, successful CRM solutions are advanced, unsuccessful programs are weeded out and the company does receive some benefit. In fact, one could, in theory, design a measurement system that measures competing CRM programs on operational measures to help the company weed out what shouldn't be done. Key concepts from successful programs can be shared and cross-pollinated across multiple teams. Proving causal linkages between human (customer or employee) behavior and business success can be dispensed with or downplayed. Instead, surviving programs and the key concepts behind them, however cross-pollinated they have become, represent the "causal" linkages "explaining" behavior or "predicting" performance. Anecdote rules. The key concepts, which inform new CRM programs, are more like memes, units of cultural information that successfully spread throughout the company. No one engineers a comprehensive behavioral model around customers nor does anyone engineer how customer knowledge is created. Is this a valid measurement approach?

Perhaps. If speed of adaptation is important, companies may not have the time to identify the right measures and the right causal relationships, which may take months or years to develop, as it sometimes does for balanced scorecard methods (Smith, 2001). Are causal measurement models better than correlated or non-causal ones at finding useful patterns? Perhaps, but the real issue is whether the measurement system is finding the right knowledge in timely way. While a non-causal CRM measurement system can detect conditions that provide opportunities quickly, determining the right business response will require some root cause analysis for diagnosing and fixing customer problems. Time becomes the pivotal variable.

All the things that can and should be measured across the enterprise regarding customers, be they value-creation, value delivery or customer insight activities, can be compared to that opaque sea. While the business can cast its net (its measurement system) to find fish (useful knowledge) where the fish usually swim, all sorts of things can cause the fish to swim in other hidden waters. Overly developed and non-adapting measurement systems are like the persistent fisherman casting his or her old nets in the same place, waiting for the fish that may never return. In this regard, the sea of activity between a company and its customers and within itself as it serves customers, is that sea of complexity. The theory of measurement advanced here is neutral on this question of causal versus non-causal customer knowledge. Investing in identifying causality is a decision that folds within the framework offered here and will be influenced by many factors. The CRM practitioner that complained that CRM stands for "can't really measure" was most likely responding to the cost of identifying causality that made proving CRM investments more difficult.

How does a business go about consistently measuring that field of complexity in a way that will detect new and unseen patterns? Most companies assume that this can be engineered in a predictable way. Some argue that it can't. At best, a business can create an adaptive internal environment that seems best suited for detecting and acting upon this field of dynamic complexity. Stacey (2000) argues that the mainstream thinking about knowledge management that says knowledge is stored within the minds of individuals in tacit form and has value only when extracted as explicit knowledge, is wrong. For Stacey, knowledge

assets lie in the "pattern of relationships between its members." Knowledge is "the act of conversing and new knowledge is created when ways of talking, and therefore patterns of relationship change." Customer knowledge comes about through interactions between people within the company.

Thomas et al. (2001) also agree that mainstream thinking about knowledge management is too simplistic. "Knowledge management is not just a matter of managing information. It is … deeply social in nature and must be approached by taking human and social factors into account," (Thomas et al., 2001). The authors argue the most important aspects of a knowledge management system is that it becomes a knowledge community; a place where people can encounter and interact with others who discover, use and manipulate knowledge.

Maxfield & Lane (1997) provide a deeper discussion about the non-deterministic way that strategy can unfold into business success through people. In this paper, the authors describe how, in complex, dynamic market conditions, business strategy shifts from management attempting to control a process of interactions by the players (or agents) involved, to control being redistributed among agents themselves to pursue a more dynamic "bottom-up" approach. In this model, agents in the market pursue and form "generative relationships" with each other. These relationships are perceived as creating value for the agents involved. How agents perceive themselves, products and services in the market and generative relationships is re-examined and reinterpreted as the agents themselves understand and describe the market space.

Another way of thinking about this knowledge management debate is to pose a question. For companies that deploy CRM systems, which contributed most to the benefits derived from the CRM system:

- Establishing strong causal linkages within the measurement model deployed or in use?
- The use of CRM technology for some efficiency or effectiveness gain?
- The socialization of the measurement framework within the culture of the company?

In extremely fluid market conditions, it seems unlikely that businesses can identify, in time, key causal linkages in customer and employee behavior when all the agents involved are reinterpreting and redefining how they conceive of products, services, customers and relationships. When the nouns are fluid, do the verbs make sense?

In actual practice, businesses combine both approaches measurement and strategy. In many cases, successful market strategies are executed locally and often without upper management knowledge and control. In time and as market conditions stabilize, these distributed pockets of control can inform and shape overall strategy for a more traditional top-down approach through performance measurement and control systems. These measurements and systems must support top-down and bottom-up communication and feedback to support learning (Simons, 2000). Figure 8 depicts the relationship between the competing concerns of overall strategy posture (shape, adapt or do nothing), market volatility within the planning horizon and organizational approach.

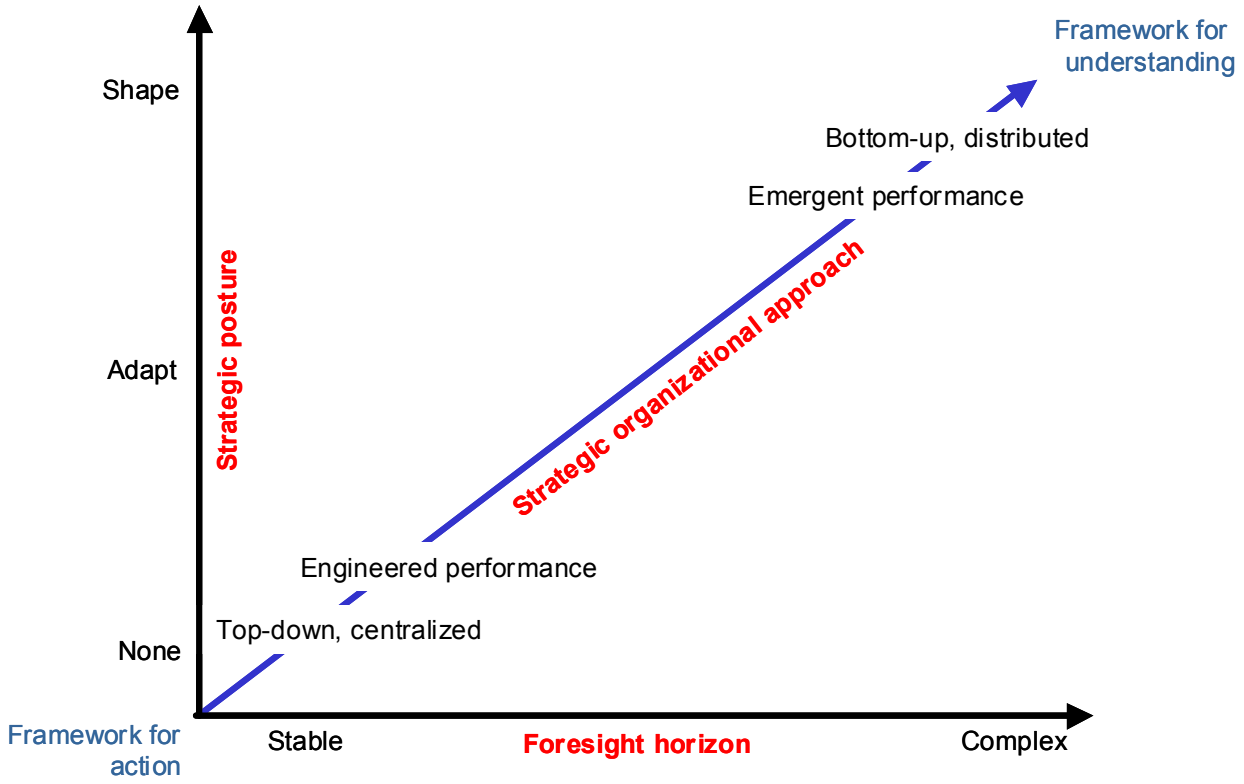

Figure 8.

This debate between engineered-knowledge-in-the-artifacts versus emergent-knowledge-in-the-human-network is a key issue for CRM measurement. For CRM measurement frameworks to be successful, companies need to understand and refine their vision of how knowledge should be structured, communicated and socialized within the organization to influence results within required time frames.

Attributes of a CRM Measurement Framework

What we need now are some attributes that help us understand what constitutes the key dimensions of a measurement approach. Measurement frameworks can have three attributes or vectors that describe them:

1. field breadth
2. field depth
3. field tractability

The term field here is defined as those customer-facing and customer-impacting activities to be measured that can include processes within the company, among its suppliers and certainly with its customers. Each of these vectors competes with each other for management funding and attention. Field breadth refers to how much of the total set of activities needed to be measured are actually measured. Are all customer segments, product categories, business processes measured? Field depth refers to how granular is the measurement approach. Systemic? At the customer segment level? At the customer level? How far are sub-attributes broken down? How frequently is data measured? Field tractability refers to how explainable and provable is the CRM measurement framework employed.

With these attributes in mind, here are the principles companies should consider for establishing the proper measurement framework:

1. The measurement framework designed must cover the field width, depth and tractability in a cost effective manner that meets the company's strategic goals. Tradeoffs between these vectors will ensue to address the cost of measurement and applicability to meeting strategic goals.

2. The measurement framework designed must consider the level of stability or complexity within the market or within the enterprise. The more complex and volatile the market, the more adaptive and timely the measurement framework needs to be.

3. The measurement framework needs to be able to function with partial and incomplete measures. It is impossible for companies to measure everything at once. A starting point must be had. One can be determined by restricting any combination of field breadth, depth and tractability.

4. For highly complex markets, the measurement framework itself will evolve, perhaps rapidly. The measurement framework needs to be either self adapting or measured in some way (meta-measurement) so that it can be reconstituted as needed. This requires a different knowledge management approach and organizational model than most companies possess. Analogies from the complexity sciences provide some future directions for thinking about adaptable measurement systems.

Building a Composite Measurement Framework

If they haven't done so already, most companies will need to build composite CRM measurement frameworks to get the optimal combination of measurement breadth, depth and tractability. Measurement frameworks are not a one-size-fits-all proposition. They need to be tailored for the company and its conditions. With the abundance of measurement approaches and lack of a comprehensive theory of customer behavior to guide them, companies will be designing frameworks themselves. Based on the issues discussed so far, here is an approach to consider.

1. Consider the planning time horizon, competitive market stability or volatility and other market of company factors.

    - Are current market conditions stable or chaotic with rapid unpredictable change?
    - What is the company's current competitive posture? Is the company attempting to shape the market significantly, adapt as a fast follower to the market, or sitting it out for a while and doing nothing?
    - What is the balance of focus needed between measuring internal capabilities and measuring customer behavior?
    - How much of the measurement framework needs to measure past activity or predict future events?

2. Consider the technology implications

    - What technical infrastructure changes are needed to support the measurement framework?
    - Can the data needed be collected and combined within this infrastructure?
    - What is the ongoing cost of measurement and data collection?
    - What are the sampling and refresh rates that will be needed to support the measurement framework?

- What are the core analytic techniques and technologies to support the data analysis needed?
- What are the technical needs to continually collect strategic and qualitative data as opposed to conventional CRM operational data?

3. Consider the organizational implications

- What skills sets are needed to support the measurement framework?
- How do motivation and incentive approaches in the company need to be altered to encourage successful measurement?
- Can the company's decision-making abilities absorb and use the measurement framework?
- Does the company have flexible communication and collaboration tools and policies that let people within the company interact with each other concerning measurement data?
- Can the customer decision-making capabilities of the company be measured and monitored so that the health of decision-making capabilities can be assessed?
- Can feedback from the decision-making process inform and alter the measurement framework?

With these considerations in mind, a CRM measurement framework deployment plan can be formulated. In most cases, deployment of new measurement approaches is evolutionary. With the inherent risks in disrupting a customer base and employees that serve the customers within a company, companies frequently choose to limit deployment along some axis. Typically companies try to control the field breadth in the following ways:

Product deployment	A measurement approach is rolled out for all customers for one specific product or service.
Segment deployment	A measurement approach is rolled out for one customer segment (or sub-segment) for all products or services.
Narrow deployment	A measurement approach is rolled out for one customer segment (or sub-segment) for one product or service.

Within each deployment model, companies can control scope further by restricting the remaining two vectors (depth and tractability):

1. Controlling the field depth by limiting the how detailed the measurement approach is
2. Controlling the field tractability by limiting causal research, data collection and analysis.

In practice, probably any sequence of deployment is possible. Since it is most unlikely that companies, especially large ones, can transform themselves completely, iterative implementations of new CRM strategies and measurement frameworks will be needed. In fact, for many companies, "adapt or perish" is the directive. Changing market conditions and customer behavior and the proprietary, non-reproducible relationship companies and brands can have with their customers practically insists on iteratively implemented, adaptable CRM measurement frameworks.

Conclusion: The Complexity of CRM Measurement

The trends sweeping us along into this era of CRM have their roots midway through the 20th Century. Postmodernism is replacing modernism. One of the key conditions of postmodernism is the reversal, in importance, between production and consumption (Firat et al., 1995). Consumption, which makes up the three-quarters of the U.S. economy, now has privileged status instead of production. Firat et al. (1995)

point out that "consumption becomes the means through which individuals define their self-images." And the marketing discipline is the primary institution reinforcing this trend.

Consumer behavior theories built on the consistency and orderliness of consumer behavior are being obviated, the authors argue. Global competition and new technologies ensure that as soon as customer behavior is on the "verge of stability and explainability, new products and services are introduced to destabilize the consumer behavior model so as to create competitive openings for challengers." Traditional variables that have been used to predict or explain consumer behavior are now lacking, the authors say. It not just that "consumers frequently change their self-concepts, characters and values, … but they often subscribe to multiple … value systems and lifestyles." This problem is not simply restricted to business-to-consumer companies. The business buyer within a company is also a consumer and is affected similarly. In addition, business-to-business companies need to understand consumer behavior as much as the retail company.

With all this hand wringing, is it that customers are becoming segments of one? Are all the recent trends of targeted marketing, micro-segmentation, 1:1 marketing, mass-customization and CRM a response to this fractional, relativistic consumer mindset or is the new consumer mindset a reflection of these recent trends? In the competitive business world, it doesn't matter which is the cause of the other. Consumers and businesses are quickly changing and showing no signs of slowing. Our measurement frameworks need to catch up. The multiplicity of frameworks for measuring "all things customer" from the strategic to the operational is supremely challenging the CRM practitioner. These new customer-facing capabilities will take time to build out. This is not surprising since companies have had 150 years of industrialization and the modern project to perfect product-facing capabilities.

Change begins with knowing. Companies today need to implement more sophisticated ways of measuring this complex and diverse field. Technology will continue to drive these new measurement approaches. Can our human minds and our human cultures keep up?

References

Aaker, D. A. (1991). Managing Brand Equity. The Free Press.

APQC. (2001, March). Customer Value Management and the Measurement System. American Productivity and Quality Center. http://www.apqc.org

Anton, Jon. (1997). Call Center Management By The Numbers. Ichor Business Books.

Ashton, Adam (2001, October 29). Online Extra: How General Mills Feeds the Web. Business Week.

Baldwin, C. Y. and Clarke, K. B. (1997, September-October). Managing in an Age of Modularity. Markets of One, Harvard Business School Press

Bixner, R., Hemerling J. & Lachenaur R. (1999). Managing Brands for Value, Boston Consulting Group, Inc.

Buytendijk, F & Hersche G. (2001, October). Research Note: Analytic Skills Make all the Difference in CRM. Gartner.

Chew, B. (2000), The Geometry of Competition. http://www.monitor.com. The Monitor Group.

Davenport, T. (1998, June). Managing Customer Knowledge. CIO Magazine. June 1, 1998.

Davenport, T. H. & Beck, J. C. (2001). The Attention Economy. Harvard Business School Press.

De Wulf, K., Oderkerken-Schroder, G. & Iacobucci, D. (2001, October). Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration. Journal of Marketing. Vol. 65.

Firat, A. F., Dholakia, N. & Venkatesh A. (1995); Marketing in a Postmodern World. European Journal of Marketing. Vol 29, No. 1.

Gale, B. T. (2002). Trends in Customer Satisfaction, Loyalty and Value. http:www.cval.com/into.html.

Gallagher, R. W & Kordupleski, R. E. (2000). Customer Value Management, The CVA 2000 Collection, Customer Value Management.

Hoyer, W. D & Brown, S. P. (1990). Effects of Brand Awareness on Choice for a Common, Repeat Purchase Product. Journal of Consumer Research. Vol. 17.

Johnson, M. D. & Gustafsson A. (2000), Improving Customer Satisfaction, Loyalty and Profit, Jossey-Bass.

Kaplan, R. S. & Norton, D. P. (2001). The Strategy-Focused Organization. Harvard Business School Press.

Kellen, V. (2001). Adaptive CRM and Knowledge Turnover. Blue Wolf. http://www.bluewolf.com

Krebs, Valdis. (1998), Knowledge Networks: Mapping and Measuring Knowledge Creation. MetaKM. http://www.metakm.com

Lane, D. & Maxfield, R. (1997). Foresight, Complexity and Strategy. The Economy as an Evolving Complex System II. Perseus Books.

Lopez, K., Raybourn, C. & Neumann Wilson, J. (2001), Measurement for Knowledge Management. American Productivity & Quality Center, http://www.apqc.org.

Macdonald, E & Sharp B. (1996). Managing Perceptions of Brand Awareness of Advertising Effectiveness. Marketing Research On-Line. Vol. 1

Maisel, Lawrence. (2001). Performance Measurement Practices: A Long Way from Strategy Management. Balanced Scorecard Report.

Nelson, S. & Kirkby, J. (2001). Seven reasons Why CRM Fails. Gartner Research Note

Peppers, D. & Rogers, M. (1997). Enterprise One to One, Currency Doubleday

Pine, J.B. II, Peppers D. & Rogers M. (1995) Do you Want to Keep your Customers Forever? Markets of One. Harvard Business School Press.

Reichheld, F. F. (1996). The Loyalty Effect. Bain & Co.

Rubin, R. (2001, December). Collaborating for CPG Success. The Forrester Report.

Rust, R. T., Zeithaml, V. A. & Lemon, K. N. (2001); Driving Customer Equity. The Free Press.

Schultz, D. E. Ph.D. (2001, March). Measuring and Managing Brand Value. ACNielsen Customer Insight.

Simons, R. (2000). Performance Measurement and Control Systems for Implementing Strategy. Prentice-Hall)

Smith, M. (2001, November). Fixing the Balanced Scorecard's Missing Link. GartnerG2 Report.

Souza, R. (2001, September). How to Measure What Mattters. The Forrester Report**.**

Stacey, R. (2000). The Emergence of Knowledge in Organizations. Emergence, 2(4) 23-39.

Thomas, J.C., Kellogg, W.A &; Erickson, T. (2001). The Knowledge Management Puzzle: Human Factors and Knowledge Management. IBM System Journal. Vol. 40 No. 4.

Trochim, W. M. K. (2001). The Research Methods Knowledge Base. Atomic Dog Publishing

Vavra, T. G. (1997). Improving Your Measurement of Customer Satisfaction. ASQ Quality Press.

Woodruff, R. E. & Gardial, S. F. (2001). Knowing Your Customer. Blackwell.

http://www.supplychainmetric.com. Accessed February, 2002.