"Applying Internal Customer Relationship Management (IntCRM) Principles to Improving Business/IT Integration and Performance"

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# Applying Internal Customer Relationship Management (IntCRM) Principles to Improving Business / IT Integration and Performance

Frank L. Eichorn[1]

> *"Effective solutions to complex business problems always involve more than tools – they must include people and processes".*
>
> Kathleen Goolsby (2001)

## Abstract

Ever since the arrival of general purpose computers into the business environment, tension has existed between the departments who implement and manage the technology and those responsible for the business functions and processes. This struggle to integrate business and IT functions becomes increasingly important as technology becomes so entrenched in every facet of business operations and a key source of competitive advantage.

Considerable research has examined the causes of this tension and offered a variety of solutions from changes in organizational structure to dramatically different approaches in technology systems development. However, too many of these solutions ignore the complex and holistic nature of organizational social systems. A more comprehensive approach is required that focuses on fostering, encouraging and nurturing improved relationships. In essence, internal business units and departments must adopt the same customer relationship management techniques internally that have become such a strategic focus externally. The Internal Customer Relationship Management (IntCRM) model was developed as a holistic capability assessment model for measuring organizational performance in 5 key dimensions required for effective business and IT integration.

IntCRM provides a quantitative and visual evaluation of the key criteria that affect an organizations propensity for managing internal customer relationships and delivering systems that meet business needs. The model is validated by demonstrating a high correlation between successful adoption of IntCRM principles and successfully delivering technology solutions to internal customers.

## Problem Statement & Relevance

### Is there a Problem?

Let's begin with a definition of business and IT integration:

*Business and IT integration involves managing the framework of people, tools and relationships within an organization to enable consistent, coordinated progress in leveraging information and technology assets to facilitate effective business processes and gain competitive advantage.*

Unfortunately, in large organizations, internal tension often exists between IT departments and the business units they serve. Attempts to resolve the problem have historically focused on two main areas. The first area examined the relationship and communication problems and focused on changes in the way that IT organizations are structured and the way they function within an organization. The second area examined the actual mechanics of creating systems and involved modifying the formal approaches and rigorous methodologies for developing information systems. Both focus areas were well intentioned and sometimes improved various aspects of IT relationships and development. However, such solutions focus on single-dimensions of the problem rather

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[1] Doctoral Candidate, University of Maryland, USA.

than adopting a holistic approach. In fact, many times these solutions actually exacerbated the problem by creating an 'us and them' mentality and reinforcing internal boundaries.

The tools and techniques that have evolved in these two areas have not appreciably improved the specific challenges of business and IT integration. It is still a pervasive issue (Brown, 2000; Xia & King, 2002) and companies continue to spend significant resources attempting to solve the problem (Creamer, 2000).

Recent research and statistics highlight these continued struggles.

- By 2004, 80% of Global 2000 enterprises will have failed in merging their IT and business strategies (Meta Group, January 2001).
- Keynote speakers at the 2001 Line56Live Electronic Business Conference in New York targeted the lack of a well-integrated technology infrastructure to support the business processes as the chief culprit responsible for most B2B project failures (Meehan, 2002).
- A survey of ten New Zealand corporations showed continuing difficulties in the integration of business and IT in both the public and private sector (Navigate, 2002).
- IS strategic alignment is one of top ten challenges faced by CIO's (Chan et al., 2001).
- An on-line research survey reported by Enterprise Works (Mejias, 2002) showed that 91% of IT managers believe that information systems and strategies should be integrated with business strategies and 77% indicate that poor understanding of business needs is one of the top barriers to the effective use of IT.

### Why is Integration Important?

The lack of integration and alignment between the departments that are responsible for implementing IT and the business units they support remains a critical problem. Xia and King (2002) reference numerous empirical studies demonstrating the importance of aligning IT and business units to achieve organizational effectiveness. This includes many studies that show a direct relationship between the level of integration and company performance and profitability.

Although the research and statistics paint a bleak picture for most companies, business and information technology integration is extremely important because it forms a foundation extending across the entire organization. "Modern business and technology are intertwined to the extent that running a modern company in all of its complexity and scale would be impossible without information technology" (Severance and Passino, 2002). In much of the information systems literature, the relationships between business users and the IT personnel are identified as central to the success of system development projects and organizational performance (Beath and Orlikowski, 2001).

## Literature Review

Considering the prevalence of business IT integration problems and the high stakes involved, it is not surprising to find a considerable volume of literature and research on the subject. In examining and classifying dozens of research articles on business and IT integration, several common items were identified. Interestingly, these items shared significant similarity to those that precipitated from analyzing research on another contemporary topic that has received considerable recent attention, Customer Relationship Management (CRM) project failures. The similarity is in no way counter-intuitive. In fact, the foundational components required for successful customer relationship management (CRM) externally, have direct applicability to internal relationships between organizational IT departments and the business units they support.

This examination led to the development of the Internal Customer Relationship model (Eichorn, 2004). This section summarizes the background behind the IntCRM model, with some adaptation for the specific business and IT integration problem.

### Culture, Leadership & Attitudes

*"Dissonant leadership produces groups that feel emotionally discordant, in which people have a feeling of being continually off-key".*

Dan Goleman (2002)

Organizations are as much a social setting as they are a place of work or production. Combined with other internal and external factors, they develop their own "cultures" and "sub-cultures". "Culture can be defined as (a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid, and therefore (e) is taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems" (Schein, 1990).

An organization's culture affects behaviors and attitudes at all levels and the results mimic those in general society, where biases can determine inclusion or exclusion and even prejudice. An organization's cultural norms impact the treatment towards various types or groups of individuals such as administrative staff, maintenance personnel and IT staff. "The assimilation of technical people into an organization presents a special challenge in the development of a learning organization. This challenge stems from the historical separation of a special group that is seen as standing outside the everyday part of the business" (Langer, 2001). IT personnel have always been seen as 'different' fixtures, as outsiders who are not part of the mainstream organization. Perhaps because of their technical habits or perceived differences in their values, IT personnel can become marginalized outside the core social structures of businesses (Chan et al., 1997). Unfortunately, many companies do not address the issue directly and a growing number have chosen to solve this problem by outsourcing their IT services, effectively creating an even wider gap between the business users and the developers.

Culture is not a state, it is emergent and temporal and is constantly being invented and re-invented and can therefore be influenced, though it can be difficult (Avison and Myers, 1995). Despite potential challenges, one of the most direct ways culture is influenced is through the attitudes and behaviors of managers and leaders. In Reich and Benbast's (2000) extensive analysis of the impact of the social dimension on business and IT alignment, they found strong evidence of cultural shifts that occurred as the result of a dramatic management change. In one relevant example, a financial services executive instituted a new practice that required all IT people to visit each of the 20 branch offices at least once a year. This was considered a "revolutionary" idea. The result was almost instantaneous improvement in shared domain knowledge, communication and empathy. Such practices can have a tremendous effect on breaking down cultural walls and reducing the internal social barriers.

Leadership plays a pivotal role in shaping the culture and impacting the success of an organization. Organizational culture and attitudes evolve over time and are heavily influenced and shaped by its leaders (Garajedaghi, 1999; Collins, 2001; Goleman, 2002; Wren, 1995). Leaders are critical to the operations, direction and success of any group and there is a strong correlation between a leader's personality and actions and the culture of that group (Wren, 1995).

### Systems Thinking & Total Quality Management (TQM)

*"Dying is very natural: staying alive is the miracle. It takes simultaneous interactions among hundreds of processes to keep someone alive".*

Gharajedaghi (1999)

What Gharajedaghi said of human beings, he equally applied to organizations. Failure to recognize, understand, manage and leverage the inter-dependencies and interrelationships among the people, functions and processes in an organization, will lead to dysfunction or death. The premise behind IntCRM is that a holistic approach that recognizes the interdependencies of business processes, business and customer needs, within a customer-centric culture that encourages horizontal collaboration, is poised for successful business and IT integration.

One of the key contributions of systems thinking in examining organizational integration is to look beyond the hierarchical structures that may be in place and to examine the company as a set of inter-connected processes and network-type operations and communication mechanisms.

Another contemporary organizational management discipline with its roots in system thinking is Total Quality Management (TQM). TQM is a set of management techniques that became popular in the 1980's (Bennington & Cummane, 1998). The basic principles provide significant contribution to many IntCRM fundamental concepts. The four essential dimensions that com-

prise the practices and techniques of TQM (Tena et al., 2001) are as follows: to establish a customer focus, implement continuous improvement practices, nurture employee fulfillment, treat the organization as a total system.

All of these TQM dimensions serve as input in the development of the integrated IntCRM model which adopts the total system concept as its foundational premise. Considerable research exists on these individual dimensions and their relationship to quality and organizational behavior and performance, but the holistic nature of the organization is critical. Recognizing and managing the dimensions as an integrated, interdependent system, not separate domains, is essential for achieving organizational effectiveness (Tornow, 1991). "Inter-functional coordination based on alignment of functional areas, promotion of interdepartmental connectedness, information sharing and strategy integration is an imperative for supplying superior value to customers" (Plakoyiannaki and Tzokas, 2002), internally and externally.

### Horizontal Collaboration, Communication & Processes

*"The management lesson seems to have been learned that no single function alone can satisfy the customer; a cross-functional effort is required".*

Bowen & Hallowell (2002)

A growing body of research supports the adoption of more holistic, process-oriented approaches toward assessing and achieving business and IT alignment and integration (Tallon et al., 2000). Such process-centric methods result in an improved overall comprehension of information flows and inter-process linkages, resulting in a clearer understanding of the entire system.

Relationships are the key. Successful internal relationships are a prerequisite for successful horizontal integration and collaboration. Nurturing internal relationships and information sharing, results in a better appreciation of identities, a clearer understanding of business processes and needs, a sharing and understanding of culture, cross-pollination of ideas, and perhaps most importantly, empathy. Internal relationships should be built around an overall context of business processes, not functional departments. Organizational leaders must strive to align relationships between the business and IT infrastructure domains in order to leverage IT opportunities and capabilities (Reich, 2000). Clark and Fujimoto (1987) note that successful alignment is achieved by direct personal contact and communication across functional business unit staff, managers and projects team members. Littlejohn (1996) extends this notion with his research that demonstrated a direct, positive correlation between increases in communication and interaction and increases in the sharing of common ideas between group members.

Relationships are at the heart of the IntCRM model. Developing internal partnerships requires establishing, encouraging and nurturing the relationships and the linkages. This will result in improved performance as measured by relevant metrics including ease of communication, process efficiency and effectiveness and impact on improved products and services (Kingman-Brundage et al., 1995; Langer, 2001).

### Information Technology Capabilities

*"It's no longer, tell me your requirements and I'll turn that into technical specifications and do some prototyping".*

Toby Renshaw, VP, Motorola, Inc.

IT capabilities are used to automate procedures, provide better information and to transform entire business processes (Dedrick, 2003). These capabilities include not only hardware and software, but also the technical and managerial expertise required to provide reliable physical services and extensive electronic connectivity within and outside a firm (Broadbent, 1999). IT capabilities clearly extend well beyond the tools. Dataquest / Garnter research studies show that the physical components only represent about 15% of the total IT resource investment. Development, installation, integration, administration and support make up the other 85%.

Data and systems architectures must serve cross-functional business needs. Process-oriented architectures include the use of lateral data models, interactive systems and integrated communications. Unfortunately, many IT departments operate in relative isolation from the business units they support. Requests for new systems or products traditionally followed some formal, rigid process of submitting requirements to IT who would propose a solution, estimate costs and prepare a project development plan. The process was slow, it did not encourage communication and business unit involvement, and systems frequently failed to meet expectations. Many methodologies evolved designed to improve understanding of requirements and expedite delivery, such as iterative development, rapid prototyping, object-oriented design and knowledge elicitation (Teeravanyou & Sato, 2001). As budgets tighten and executive management strives to demonstrate ROI on IT investments, there is continued focus on improving coordination, cooperation and performance of information technology systems (Subramani, 1999).

The ability to effectively develop internal relationships among departments hinges on the creation of communication, system development process and strategic linkages (Chan et al., 2001; Subramani, 1999). Creating these linkages appears to be a simple and alluring concept, but the complexities surrounding culture, leadership and ambiguity of roles presents difficult challenges. IT groups have historically sought to improve the requirements definition process as a way of improving performance and user satisfaction. However, studies show (Henderson et al., 1990; Kathuria & Partovi, 2000) that this unilateral approach falls short of creating real integration or partnerships. The efforts must be expanded to improve communication and user involvement throughout the process and develop shared goals and objectives. User immersion in the development process and better understanding of the technology combined with educating IT staff of the business processes and needs, results in improved perceptions of performance and satisfaction on both sides (Subramani, 1999).

### Employee Satisfaction = Customer Satisfaction

*"Employee satisfaction and engagement are related to meaningful business outcomes at a magnitude that is important to most organizations".*

Harter, Schmidt & Hayes (2002)

Satisfied employees perform better and treat customers better, internally and externally, ultimately leading to better overall customer satisfaction. This causal relationship is an intuitive concept that is well supported and quantitatively substantiated by the academic research and literature (Phipps, 2001; Scarpello & Campbell, 1983; Zerbe et al., 1998; Tornow & Wiley, 1991). The results of the studies are not surprising. In a 1985 study (Tornow & Wiley), Schneider demonstrated a direct relationship between organizational service practices and procedures that affect employees and responses by customers. In a more in depth study in 1991, Tornow and Wiley analyzed responses from 667 employees and 663 customers across 30 business units of a multi-national computer corporation. The results showed a strong correlation between employee and customer satisfaction.

There is no question that employees are part of the overall value-chain and improvements to the initial part of this chain have a contributing effect all along the value-chain. Bailey and Dandrade (2003) discuss this causal effect in their depiction of the Service-Profit Chain (Figure 1).



From: "Achieving Breakthrough Service"
Ref. "The Service-Driven Service Company"
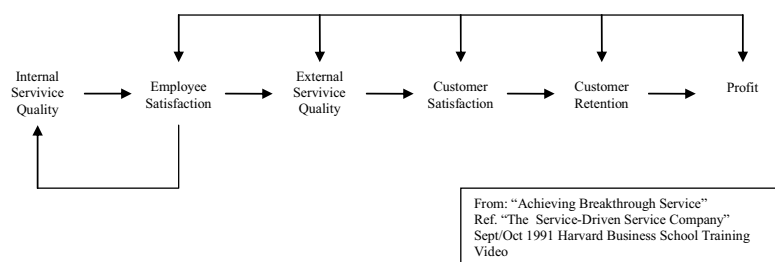Sept/Oct 1991 Harvard Business School Training Video

Fig. 1. Service-Profit Chain

The diagram clearly illustrates what is perhaps an intuitive relationship, and their analysis of numerous companies across a variety of industries, validates this intuition with a .86 correlation between employee satisfaction and customer satisfaction. This strong correlation is bolstered by the subsequent positive effect that employee satisfaction has on increased profitability (Tornow, 1991; Tena et al., 2001). Another item of particular interest in the development of the IntCRM model is the self-reinforcing loop observed between employee satisfaction and internal service quality as the starting point for the Service-Profit Chain. The Service-Profit Chain research conclusively illustrates that improved customer relationship skills applied internally, result in improved employee satisfaction, and this causal relationship leads to satisfied external customers and an increase in the bottom-line.

## IntCRM Assessment Model

The basic premise of the IntCRM model is that an organization must possess an integrated foundation of capabilities, across these key dimensions identified as critical for successful customer service, and that the definition of customers must be expanded to include both internal and external consumers of a business units products. Figure 2 illustrates the relationship between the key components and the holistic nature of the IntCRM model.

Leaders provide guiding direction, set the overall tone for an organization, and directly impact the culture and attitudes of its members (Collins, 2001; Goleman, 2002). Leaders must lead by example if they desire excellence in customer service and quality, internally and externally. Effective internal exchanges are a prerequisite for organizational success (Zerbe et al., 1998). Customer-centric leadership provides the catalyst to fuel internal and external customer-centric behaviors such as horizontal communication and collaboration. Congruent reward systems will further encourage cooperative behavior and help achieve cross business-unit synergies, resulting in a significant increase in employee satisfaction and overall service quality and employee performance (Rogg et al., 2000; Zerbe et al., 1998).

Effective information technology capabilities are critical for enabling and facilitating communication, processes and information flows inside and outside the organization (Plakoyiannaki & Tzokas, 2002). They are both the result of effective integration and they facilitate it. Assuming a collaborative culture exists and customer service practices are extended across the organization, employee satisfaction will increase resulting in a corresponding improvement in customer satisfaction (Harter, 2002). And finally, as the figure illustrates, there is a reciprocal, self-reinforcing effect between the key dimensions and within the IntCRM model.
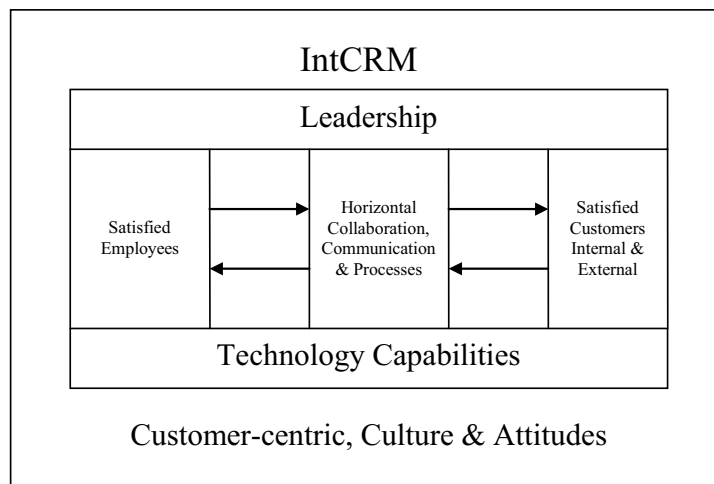


Fig. 2. Internal CRM Model

# Research Approach and Methodology

The primary focus of this research is to test the application, validity and value of the IntCRM model in an organizational setting. Specifically, the goal is to demonstrate that applying IntCRM principles (causal variables) within an organization improves internal customer satisfaction (measured outcome) and therefore overall business unit and IT perceptions of integration and effectiveness.

### Quasi-Experimental Research

Quasi-experimental research design is a popular method for examining the effects of causal factors on similar groups over an extended period of time. In fact, one specific approach, Nonequivalent Group Design (NEGD) has become the most frequently used design in social science research (Trochim, 2001).

Several recent research examples demonstrate applicable precedence for using quasi-experimental techniques for this particular topic and provide a useful framework to emulate. Lam and Schaubroeck (2000) used quasi-experimental techniques to demonstrate the causal relationship between employees who were passed over for promotions and the effect on their general satisfaction and overall performance. In a more recent and very relevant example, Erez, Lepine and Elms (2002) conducted a quasi-experiment that assessed the variance in team performance as impacted by significant differences in internal leadership and work processes. All of these studies involved assessment and evaluation of groups who shared many similarities with the exception of the particular item(s) being studied.

Although systems complexity may appear to seriously challenge any hopes of drawing meaningful causal interpretation, proponents of these methods argue that within the organizational setting, social scientists can reach accurate conclusions about causal inference on macro group characteristics (Trochim, 2003; Robson, 1993; Henrichsen, Smith & Baker, 2004; and Berg, 1989).

# Research and Data Collection

### Research Setting and Approach

Remember that the purpose of this research is to examine the factors that impede or improve an organizations ability to integrate IT support services with the business unit customers they support. The IntCRM model identifies these factors, and internal customer satisfaction ratings will be used as a proxy for successful IT integration. The research goal is to show that good performance across the IntCRM dimensions is positively correlated with good internal customer satisfaction scores.

The two IT departments involved in the study are part of a large financial services organization. These two IT departments were formed at about the same time, early 2000, with similar missions and objectives. The first team adopted a very formal, rigid and bureaucratic approach to development and support. The second team adopted a very different approach involving a collaborative effort between the IT and business unit resources, with an emphasis on satisfying business unit processing requirements as a higher priority than meeting current IT standards, and with special emphasis on achieving excellence in internal customer service. In essence, they adopted most of the principles espoused by the IntCRM model.

Post-test data collection consisted of both a survey and structured staff interviews with key stakeholders.

### Research Population

In order to accurately assess all of the IntCRM dimensions, the target research population included the IT developers, the IT and business unit managers and the internal business unit customers supported by both teams. Even though there have been some staff changes during the 4 years since the efforts began, 90% of the IT development personnel on both teams and more than 75% of the business unit customers are still employed with the company. Table 1 summarizes the target population. It is important to note that the supported business users extend across the entire organization, not just a single department or division.

Table 1

Target Survey Population & Actual Respondents

| Target Population | Potential Respondents | Actual Respondents |
|---|---|---|
| IT Developers | 6 from team 1<br>9 from team 2 | 5 from team 1<br>5 from team 2 |
| IT and business unit managers | 20 | 10 |
| Business unit internal customers | 150 | 50 |

*Survey Instrument*

A survey instrument (Table 2) was designed and administered to the development staff and managers of both teams, and the internal customers they supported. The IntCRM metrics precipitated from the extensive literature review and established research in each of the relevant areas. The survey design and administration followed strict experimental control guidelines including survey question homogeneity and consistency of delivery across all respondents (Campbell and Stanley, 1966). The survey questions required employees to indicate their level of agreement with each statement using a 5-point Likert scale. Each of the survey questions required two responses – one for each IT support team. The survey was divided into 6 sections. The first five correlated to the 5 IntCRM dimensions and the last section assessed overall satisfaction metrics with the performance of the two IT teams and processes.

Table 2

IntCRM Survey Questions

| Effective Leadership |
|---|
| 1. Managers and leaders demonstrate high levels of integrity when making decisions. |
| 2. Managers and leaders explore, identify, or define the nature, causes, and implications of problems. |
| 3. Managers and leaders demonstrate consistency between espoused objectives and actions. |
| 4. Managers and leaders understand day to day business operations. |
| 5. Managers and leaders actively communicate and build relationships among key stakeholders. |
| 6. Managers and leaders possess the technical competencies to achieve the business goals and objectives. |
| 7. Managers and leaders align the team's visions, values, goals, and action plans. |
| 8. Managers and leaders consistently and clearly communicate the desired results, processes and plans. |

| Customer-centric Culture and Attitudes |
|---|
| 1. Employees are encouraged to treat internal customers with the same level of quality and service as external customers. |
| 2. Employees are praised and rewarded for providing excellent internal support and customer service. |
| 3. Employees have the authority to make decisions and solve internal customer problems without seeking supervisor authority. |
| 4. Employees are trained, technically competent professionals eager to provide excellent quality and customer-service. |
| 5. Employees work with business users to set priorities for system delivery, enhancements, or ad-hoc requests. |
| 6. Managers lead by example with regards to excellent internal support and service. |
| 7. Managers clearly emphasize the importance and value of providing excellent customer-service internally and externally. |
| 8. Managers communicate and share internal customer feedback and perceptions of service quality. |

Table 2 (continuous)

| Technology Capabilities |
|---|
| 1. The platform provides a comprehensive source of data and information that meets most or all of your data needs. |
| 2. The data and information accurately and reliably reflect the source system data. |
| 3. The software tools and data manipulation capabilities meet your operational and processing requirements. |
| 4. The process for requesting and tracking enhancements or assistance is clear and easy to use. |
| 5. The roles and responsibilities of the support team are clearly communicated and understood. |
| 6. The platform provides tools for user support and assistance such as new user assistance, system documentation and a help desk. |
| 7. The platform facilitates information and knowledge sharing across the organization. |
| 8. The system performance (response time, availability) adequately meets my needs. |
| **Employee Satisfaction** |
| 1. Compensation and benefits are adequately correlated with your roles and responsibilities and there is a compensatory link to performance. |
| 2. Your immediate workplace is a pleasant environment free of excessive tension, stress, insecurity or distrust among co-workers. |
| 3. Company policies are clearly communicated and equitably administered across the organization. |
| 4. You have frequent opportunities for continued training, development or advancement. |
| 5. You receive regular and appropriate feedback regarding your performance, including praise and criticism. |
| 6. Your immediate manager are competent in their roles and responsibilities including decision making, setting goals and objectives and providing direction and guidance to the team. |
| 7. You have opportunities to use your own judgment, creativity or expertise in solving problems. |
| 8. You do not feel pressured to take action or make decision that you feel are inappropriate or unethical. |
| **Horizontal Collaboration, Communication & Processes** |
| 1. Cross-functional team recognition programs and incentives exist and are supported. |
| 2. Finger-pointing, assigning blame, and other self-preservation behaviors are not accepted or tolerated by senior management. |
| 3. The organization uses rigorous project management standards and techniques for large initiatives. |
| 4. Conflicts of authority, power struggles and other "turf wars" on projects, initiatives and decisions are a rare occurrence. |
| 5. Budgets exist to support team and relationship-building activities, cross-training etc. |
| 6. Business units are encouraged to seek opportunities to collaborate on initiatives and technology investments, with a focus on sharing and leveraging resources across the organization. |
| 7. Business-units drive the process for prioritizing and funding new projects, initiatives, and technology investments, with the assistance and guidance of IT. |
| 8. Business units are discouraged from creating or using their own independent data and information sources for decision making. |
| **Overall Satisfaction** |
| 1. The platform provides direct business value to your operations. |
| 2. The support team actively pursues technology enhancements based on our requirements and continually offers improvement options for business-unit consideration. |
| 3. The support team is knowledgeable, professional and responsive. |
| 4. The platform is easy to learn and use. |
| 5. The managers and leaders of the platform are competent, effective and focused on providing business value. |
| 6. The support team provides clear and timely notification of system schedules, changes, or disruptions that impact business unit processing. |
| 7. The support team is accessible and communication and request processes are clearly articulated and meet business requirements. |
| 8. You highly recommend the platform to your colleagues that have similar processing requirements. |

*Participant Interviews*

In-depth interviews were conducted with 13 key stakeholders within the financial services organization, grouped into the same three target categories as the survey: 3 IT developers, 4 IT and business managers and 6 business users.

The interviews were conducted over a one-week time period with a few follow-on questions for some participants. Each person was notified of the purpose of the interview and assured of confidentiality and anonymity.

### Survey Data Analysis

The data were collected, organized and summarized in order to conduct a variety of statistical analyses focused on assessing correlation and causality.

1. Step 1 – Confirm Statistical Variance
2. Step 2 – Correlation Analysis
3. Step 3 – Validate Correlation – Analysis of Variance (ANOVA)
4. Step 4 – Demonstrate Causality

*Confirm Statistical Variance*

In order to examine the variance, overall customer satisfaction ratings for both teams were calculated and the distributions are plotted. Overall ratings were calculated by summing the scores for each of the eight questions in that category. Remember that the customer satisfaction scores are being used as a proxy to assess the success of alignment and integration between the IT teams and their business customers. The distribution of these scores is then plotted for each team. An examination of the two plots indicates a marked difference in the mean and variance of the scores and clearly indicates a statistically significant non-equivalence with respect to the dependent measures.
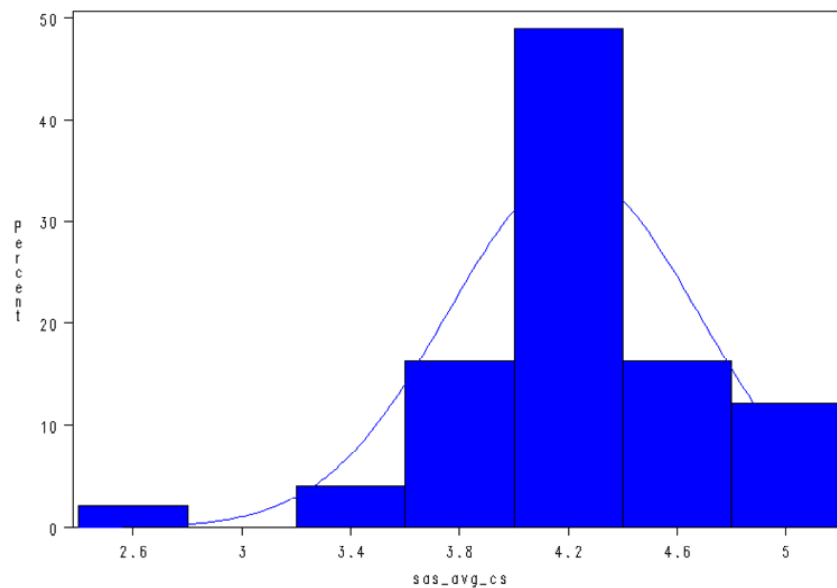


Fig. 3. Distribution of Average Customer Satisfaction (SAA) Scores – Test Group
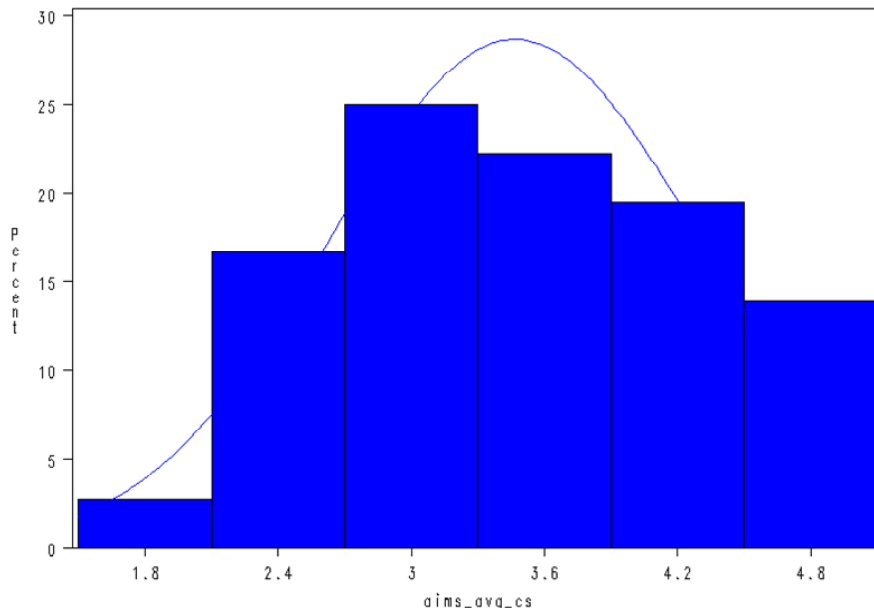
Fig. 4. Distribution of Average Custo mer Satisfaction (AIMS) Scores – Control Group

Table 3 provides a more precise analysis of this effect by summarizing the key statistical measures displayed in the graphs. The most obvious difference is the mean of the distribution. The average customer satisfaction ratings for the Test Group were almost a full point higher than the Control group. More importantly, the smaller range and variance indicate a much more consistent experience by the business customers with the Test group.

Table 3

Test group Customer Satisfaction Summary

| Distribution Comparison of Customer Satisfaction Scores for the Test Group vs. Control group | | | | | |
|---|---|---|---|---|---|
| Location | | | Variability | | |
| | Test Group | Control Group | | Test Group | Control Group |
| Mean | 4.216837 | 3.468750 | Std Deviation | 0.45912 | 0.83686 |
| Median | 4.125000 | 3.500000 | Variance | 0.21079 | 0.70033 |
| Mode | 4.000000 | 4.000000 | Range | 2.25000 | 3.12500 |

Additional response analysis yields some interesting results. Table 4 contains the average total scores for each dimension, including customer satisfaction, grouped by the respondents' job role. The first and most obvious conclusion is that the developers on both teams share similar perceptions about performance in each of the IntCRM areas. The variance is negligible. However, a quick look at the scores from the other two respondent groups show that the Control groups' perception is inconsistent with both the managers and the users and that there is a large difference in most dimensions. This phenomenon of the developers holding a somewhat disjointed opinion of their effectiveness also helps explain why the Control Group customer satisfactions ratings (Fig. 4) include a noticeable collection of scores to the right of the mean.

Table 4

Survey Response Summaries by Respondent Role

| | Test Group | Control Group | Difference |
|---|---|---|---|
| Developer | | | |
| Leadership | 34.00 | 33.83 | 0.17 |
| Employee Satisfaction | 32.13 | 33.40 | -1.27 |
| Customer-centric Focus | 33.71 | 34.33 | -0.62 |
| Horizontal Collaboration | 26.40 | 27.25 | -0.85 |
| Technology Capabilities | 33.86 | 34.00 | -0.14 |
| Overall Customer Satisfaction | 33.57 | 32.80 | 0.77 |
| Managers | | | |
| Leadership | 33.20 | 25.00 | 8.20 |
| Employee Satisfaction | 31.00 | 30.40 | 0.60 |
| Customer-centric Focus | 32.40 | 25.60 | 6.80 |
| Horizontal Collaboration | 29.17 | 25.86 | 3.31 |
| Technology Capabilities | 31.71 | 22.50 | 9.21 |
| Overall Customer Satisfaction | 34.11 | 24.29 | 9.82 |
| Users | | | |
| Leadership | 32.81 | 24.91 | 7.90 |
| Employee Satisfaction | 29.69 | 27.94 | 1.75 |
| Customer-centric Focus | 31.89 | 26.33 | 5.56 |
| Horizontal Collaboration | 25.22 | 23.50 | 1.72 |
| Technology Capabilities | 30.13 | 25.50 | 4.63 |
| Overall Customer Satisfaction | 33.67 | 27.71 | 5.96 |

*Correlation Analysis*

Having concluded that there is some type of effect occurring between the two teams, the next step is to analyze the responses related to the particular IntCRM dimensions to determine if there is a positive correlation between those scores and the customer satisfaction, i.e. business integration and alignment, scores. The following tables and graphs are the results of a simple Pearson correlation analysis conducted between the individual IntCRM dimension scores for each team and the overall customer satisfaction scores. It is important to note that the purpose of this research is not to validate the efficacy of the individual metrics and determine if any of them show a higher correlation than others. Such a decomposition of factors would second-guess the cited research that yielded these measures. Furthermore, it would be inconsistent with the basic holistic premise of the IntCRM model.

Table 5

Summary IntCRM dimensions vs. Customer Satisfaction - Test Group

| Correlation Analysis of IntCRM Dimensions vs. Overall Customer Satisfaction Ratings for the Test group | | | | | |
|---|---|---|---|---|---|
| | tech_sum | cust_sum | lead_sum | empsat_sum | collab_sum |
| Pearson Correlation Coefficients | 0.61130 | 0.57173 | 0.55101 | 0.34952 | 0.24549 |
| Prob > \|r\| under H0: Rho=0 | <.0001 | 0.0012 | 0.0002 | 0.0340 | 0.1757 |

Table 5 contains a summary of the correlation between each of the IntCRM dimension scores and the overall customer satisfaction score for the Test group. The correlation coefficients

for technology capabilities (tech_sum), customer-centric behaviors (cust_sum) and effective leadership (lead_sum) show a very strong positive correlation. Employee satisfaction (empsat_sum) and horizontal collaboration (collab_sum) scores do not show a strong correlation, but further analysis may yield additional insight.

Table 7 summarizes the correlation between the individual IntCRM dimension scores and the overall customer satisfaction scores for the Control group. It turns out the Control Group scores show an even stronger correlation in all the dimensions.

Table 7

Summary IntCRM dimensions vs. Customer Satisfaction – Control Group

| Correlation Analysis of IntCRM Dimensions vs. Overall Customer Satisfaction Ratings for the Control group | | | | | |
|---|---|---|---|---|---|
| | tech_sum | cust_sum | lead_sum | empsat_sum | collab_sum |
| Pearson Correlation Coefficients | 0.79535 | 0.71953 | 0.67532 | 0.51478 | 0.46014 |
| Prob > \|r\| under H0: Rho=0 | <.0001 | 0.0001 | <.0001 | 0.0085 | 0.0237 |

Since the foundation of the IntCRM model is its holistic nature, an overall IntCRM score is calculated by summing all of the individual dimensions scores. Correlation analysis is then performed on this summary score versus the overall customer satisfaction score. Table 8 summarizes these correlation results for both Test Group and Control Group. Notice the correlation is very strong for both the Test Group and the Control group.

Table 8

Test Group and Control Group Holistic Correlation Analysis

| Correlation Analysis of Overall IntCRM Score vs. Overall Customer Satisfaction Ratings for the Test Group & Control group | | |
|---|---|---|
| | Test Group | Control Group |
| Pearson Correlation Coefficients | 0.67366 | 0.81212 |
| Prob > \|r\| under H0: Rho=0 | <.0001 | <.0001 |

The correlation analysis clearly demonstrates a strong relationship between the summary scores for the IntCRM dimensions (independent variables) against the customer satisfaction scores (dependent variable). Following Professor Trochim's (Trochim, 2001) NEGD methodology, the next step is to conduct analysis of variance (ANOVA) tests. Conducting ANOVA provides two major statistical substantiations:

1. Evidence that the correlations did not occur purely by chance and therefore helps demonstrate causality.
2. Quantifies the relationship between IntCRM performance and business IT integration.

In a controlled, randomized experiment comparing only two groups, statistical t-tests are customarily used for this phase of analysis. However, for NEGD quasi-experiments, ANOVA is more appropriate since the groups are not "controlled" and the variance to mean of the score distributions is considerably different. ANOVA is considered a more robust technique for this type of research setting (Cody and Smith, 1997).

The ANOVA procedure calculates a statistical probability that the correlations being tested could have occurred purely by chance. This number provides quantifiable evidence of the strength and validity of the relationship between the IntCRM factors being assessed and the customer satisfaction score results. Table 7 summarizes the ANOVA results for both teams individually and then the entire response set overall. In general, any Pr > F below .05 is considered good.

Both teams are below this score with the combined analysis indicating an extremely low probability (Pr>F = .0001) that the observed effect could have occurred by chance.

ANOVA Summary

| Team | Source | DF | Anova SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|---|
| Test Group | intcrm_score | 36 | 783.6500000 | 21.7680556 | 1.96 | 0.0465 |
| Control Group | intcrm_score | 38 | 1858.833333 | 48.916667 | 13.43 | <.0001 |
| Overall | intcrm_score | 60 | 3663.750000 | 61.062500 | 7.56 | <.0001 |

The statistical analysis demonstrates a strong correlation and low probability that such correlation could occur by chance. This is strong quantitative evidence of the cause and effect relationship between the IntCRM dimensions and the satisfaction ratings of the internal customers. The next phase of this research involves augmenting this data with a more qualitative evaluation of the interview data from various key stakeholders involved in this organizational setting.

### Interview Data Analysis

13 interviews were conducted in person, by phone, and in a couple cases by email. The information is organized and classified into three general areas: keyword and themes, attitudes and perceptions, and insightful responses to key questions. Table 10 lists the key questions that were used to guide the interviews and a cross-reference to the related IntCRM dimension.

Interview Questions

| Question | IntCRM Dimension | | | | |
|---|---|---|---|---|---|
| | Leadership | Technology | Employee Satisfaction | Collaboration | Customer Focus |
| Describe IT's role within Wells Fargo. | X | X | | X | X |
| Describe the relationship between IT and the business units at the management level. | X | | X | X | X |
| Who owns the technology and the data? | | X | | X | X |
| Can relationships be improved? | X | | | X | |

The data were analyzed by using an interview data reduction process where key elements have been extracted and are displayed so that patterns can be discerned and consistency can be evaluated. Observation, inference and the author's assumptions and experiences affected the distillation process, but interesting results still precipitated. The results grouped by respondent type: developer, manager or customer. Overall summaries are also provided.

### Keywords and Themes

Table 11 summarizes key themes that emerged from the interviews with management. The themes and attitudes are consistent with the statistical differences in scores between Test

Group and Control Group. Business and IT managers believe that the Test Group IT teams are generally aligned with the business.

Key Points and Themes: Management

| Keywords & Themes | | |
|---|---|---|
| | **Test Group** | **Control Group** |
| **Business Managers** | <ul><li>IT facilitates delivery of business solutions</li><li>IT & business work together</li><li>Business units own the technology and the data</li><li>Priorities are assigned by business units with IT's help</li></ul> | <ul><li>Breakdowns results from lack of partnering</li><li>Huge opportunity to partner with IT to create 'more effective and more efficient teams'</li></ul> |
| **IT Managers** | <ul><li>IT manages technology processes</li><li>Vertical priorities are aligned but no horizontal alignment. Single business unit projects are successful, but no cross functional successes</li><li>Business owns the technology, but too many IT staff think otherwise</li></ul> | <ul><li>Business is hard charging and has little patience</li><li>Business units are reactionary</li><li>Strategic direction is poorly defined</li></ul> |

Many of the phrases heard during the management interviews indicate significant issues regarding business and IT integration with regard to the support provided by the Control Group. One business manager attributes breakdowns to the lack of partnering and physical separation. This manager suggests that it is difficult at best and nearly impossible to establish effective relationships and partnerships with other staff members that sit in an entirely different building. When the majority of communication occurs through email and sometimes phone calls, significant amounts of information are never shared and the impersonal nature of such mediums can lead to insensitive and uncongenial behavior – not exactly a good foundation for partnering, alignment and integration.

Several other interesting findings emerged during the management interviews. One business manager suggests that the company has experienced considerable success when the IT team is supporting a single business units focused requirements. They felt that the real problems occur whenever system requirements crossed functional business areas. Upon further investigation, it was interesting to discover that this manager believed the Control Group supported cross-functional business units and that the Test Group only supported his business unit. In fact, both IT teams supported business users across the enterprise. The difference is that the Test Group had effectively made this manager feel that they were his only customer!

Table 12 summarizes key themes that emerged from the interviews with the IT staff. Interestingly enough, the themes and attitudes are again consistent with the statistical differences in scores between Test Group and Control Group. Both IT teams are confident that they are adequately meeting the business user needs. However, the responses from the Control group reflect a very classic, centralized and compartmentalized approach to IT. They clearly see the business role in the relationship as simply a requestor. The Control Group IT personnel most often felt that they were, and should be the experts on the technology. This technical arrogance is naïve and does not foster productive relationships. Such attitudes often create conflict, especially when working with technologically savvy users and managers. The attitudes on the Test group were markedly different. They frequently spoke of collaboration, customer service and interrelationships as key to development success.

Table 12

Keywords and Themes: IT Staff

| Keywords & Themes | | |
|---|---|---|
| | **Test Group** | **Control Group** |
| **IT Staff** | • IT supports the technology needs of the business<br>• On a given project there are two project managers – one business and one IT<br>• Business and IT need to collaborate of developing solutions | • IT converts requirements to technical specifications<br>• IT manages technology and systems<br>• IT is centralized source for technology |

Table 13 summarizes key themes that emerged from the interviews with the business users. Again, the results provide compelling support for the quantitative analysis. Business users sense the isolationist attitude from the Control Group IT and significant tension and animosity exist.

Table 13

Keywords and themes: Business Users

| Keywords & Themes | | |
|---|---|---|
| | **Test Group** | **Control Group** |
| **Business Users** | • The Test Group provides frequent communication so we can avoid surprises<br>• The Test Group participates in all business meetings related to technology needs and planning<br>• We go to the Test Group because we can expect results in days instead of months | • Control Group and the business are not on the same team and this is sanctioned at the top<br>• No single point of contact in IT for existing systems and technology<br>• Control Group is too far removed from the business<br>• Poor communication exists<br>• Schedule delays are common |

In the Control Group environment, the business users frequently expressed discontent with the level of support, speed of execution, and communication difficulties associated with projects or activities requiring IT support. Interestingly, though all were dissatisfied, the reasons were often very different. Some business users felt IT tried to exert too much control and influence over proposed solutions, while others thought that IT offered no expert advice and simply functioned as order takers. This disparity highlights the need for integrated versus centralized resources. User needs vary and relationships are necessary in order to adjust or adapt to these needs.

*Interview Analysis Summary*

Table 14 summarizes the interview findings by cross-referencing the three groups against the IntCRM dimensions and indicating the relationship between the reduction analysis and transcripts reviews with the statistical findings. Since this portion of the analysis is qualitative, arrow notation is used to show the correlation:
- Supports statistical findings - ↑
- Refutes statistical finding - ↓
- Neither supports nor refutes the statistical findings - ↔

Table 14

IntCRM Interview Correlation Analysis

| Interview Group | IntCRM Dimension | | | | |
|---|---|---|---|---|---|
| | Leadership | Technology | Employee Satisfaction | Collaboration | Customer Focus |
| Management | ↑ | ↔ | ↔ | ↑ | ↑ |
| IT Staff | ↑ | ↔ | ↑ | ↔ | ↑ |
| Business Customers | ↑ | ↑ | ↔ | ↑ | ↑ |

The interview analysis proved effective in substantiating the findings of the statistical analysis. Combined with the quantitative data, there is sufficient evidence to assert a causal relationship between existence of effective IntCRM dimensions within an organizational setting and the level of integration and success between an IT department and its internal customers. This research vindicates the use of the IntCRM model as an assessment tool for improving this critical area within a company.

### *Constraints and Limitations*

There were a few constraints and limitations encountered during this study. The most notable research constraint was the data collection method. Surveys, while an efficient tool for collecting data from large numbers of people, have inherent challenges to validity including question bias, variance in response levels across respondents due to the subjectivity of scoring measures, and richness and accuracy of response due to level of effort appropriated by respondents. Augmenting the survey data with interviews was the strategy aimed at mitigating the effects of these constraints.

The most notable limitation was time. While the interviews did corroborate the survey findings and substantiate the findings, observation of staff interactions over an extended period of time may yield deeper insight into the relationship dynamics, leadership styles and other critical factors related to the IntCRM dimensions.

## Lessons Learned

Two very important lessons were observed during this research. The first is a well known risk about the sensitive and sometimes controversial nature of conducting organizational assessments. Assessments that involve direct communication with key stakeholders that are part of the subject organization, can elicit a variety of emotional reactions. These include fear, hostility, resentment and animosity. These responses can occur anytime individuals sense that they are being evaluated. However, in this research setting, this effect was exacerbated by engaging in data collection that compared two groups. Much of the information related to this lesson was realized during the interviews. Some of the individuals, who were confident in their performance, appeared to try and use this as an opportunity to make themselves look good at the expense of the other group. At the other end of the spectrum are staff members who realized that problems existed. They sometimes showed apprehension and fear and occasionally voiced concern that the information may be used to adversely impact their team. Managing the communication flow during the interviews and ensuring that important relationships were not damaged, often required a significant amount of diplomacy.

The second lesson was actually confirmation of the importance of a key IntCRM dimension – leadership. Remember that the IntCRM model represents a holistic approach to organizational assessment and management. Consistent with this holistic framework, no attempt has been made to "weight" the five dimensions. Such an effort might miss the interdependency between these sub-systems and more importantly, may result in organizations attempting to focus on a single dimension or two. This interdependency was made eminently clear during the research, especially with respect to the leadership behavior. While the quantitative data showed a direct, strong correlation between leadership and customer satisfaction, the interviews suggested a strong correlation between leadership and all the other IntCRM dimensions as well. Among the IT managers on the Control Group, leaders generally expressed the more classic (if I can use such literary license) attitudes of "IT knows best". Their attitudes and behavior were echoed by their staff and directly impacted staff attitudes and behavior regarding customer service, horizontal collaboration and approaches to developing technical solutions. On the other hand, the Test Group appeared to easily adopt customer focused, collaborative approaches espoused by their leaders and managers. The result was a multiplicative effort moving down the organization hierarchy that resulted in high levels of customer satisfaction.

## Recommendations

### *Visual Display of IntCRM Assessments*

Performing an IntCRM assessment will yield useful quantitative measures to help managers and staff members identify those areas that need improvement. To facilitate the reporting, communication and quick summarization of these measures, a visual tool has been developed for displaying the results of an organizational IntCRM assessment. This visual aid creates a picture that enables individuals across the organization to quickly see a summary of the IntCRM scores and provides management and staff with a mechanism for calibrating how well they are positioned for achieving successful business and IT integration. Since there are 5 key dimensions, the geometric figure chosen is a pentagon (Fig. 5).
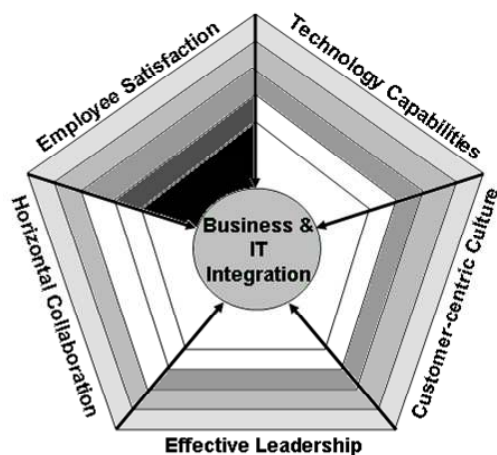


Fig. 5. IntCRM Assessment Tool

The use of the pentagonal diagram with integration at the center is aimed at articulating the holistic nature of the model including the interrelationships and interdependencies of all dimensions. No one spoke can achieve the desired affect. Each spoke has 5 blocks that correlate to the survey measures, from strongly disagree at the outer-most block to strongly agree at the inner-most block. Shading of these blocks correlates to the average responses in each of those dimensions. Obviously, a perfect score would indicate complete shading of all spokes leading to successful business and IT integration at the center. Color versions of the diagram use the commonly ac-

cepted "traffic lighting" colors of red through green that have been popularized by the Balanced Scorecard tools (Kaplan and Norton, 1992). Such shading, where the colors fade from red on the outer rings indicating a poor score, through yellow and green towards the inner rings, enhance the visual effect and help management immediately see those areas that need immediate attention.

Using the assessment results, companies can develop tactical and strategic initiatives aimed at improving those IntCRM dimensions where there are deficiencies, recognizing that they are all inter-related.

## Summary

This research supports the use of the IntCRM model for conducting assessments of key organizational dimensions that impact business and IT integration. Using the assessments results, organizations can adapt their existing initiatives and implement new strategies to address various deficiencies. This section of the paper provides some suggestions and resources for improving performance in each of the IntCRM dimensions. This is in no way intended to be a comprehensive compendium of management solutions. Rather, this information is intended to be prescriptive, stimulate ideas and help guide the development of initiatives. It is important to remember that organizations are unique systems and there is no one-size fix solution. The IntCRM model is a useful tool that provides useful insight into diagnosing the health and effectiveness of key areas of the organization.

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