

Measuring “Customer-Centeredness”: A Case Study in Healthcare

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I. Abstract

To be customer-centered, an organization must consider the customer in all decisions and actions. Activity in the organization must be anchored around the customer. Becoming “customer-centered” is more than implementing Six Sigma, lean, or other improvement initiatives. This paper reports the application of “customer-centeredness” tools in a healthcare organization. Instrumentation to measure patient-centered care (PCC) was developed, pilot tested, and implemented to gauge the level of PCC in a critical access acute care facility in the Intermountain West of the United States. Case results are shared and implications identified for the broader engineering management community to measure their level of customer-centeredness.

II. The Customer in Healthcare: The Patient

Twenty years ago, businesses around the globe had a revelation—quality should be defined in terms of the customer’s perspective. No longer could quality be defined solely in terms of technical specifications. If the customer was not happy, or not delighted, the technical specifications, while within control limits, didn’t have much to do with customer satisfaction. The customer came to expect certain levels of technical quality and began to demand more concerning the delivery of the good or service, including their ability to provide input to the design and delivery of the good or service.

For several decades, the focus of many improvement initiatives in manufacturing and traditional service industries has been to improve operations from the customer's point of view. While not universally adopted, the customer focus was the essence of Total Quality Management (TQM) and related approaches. Some efforts were made to treat patients in a hospital setting as a customer, but these have not been as widespread nor as successful. The reasons for this are rooted in the complexity of the healthcare system.

Healthcare systems consist of a hospital, its nurses (in short supply), physicians (contractors to the hospital but not hospital employees, generally), patients (who need the hospital's services, but who do not desire to be in the hospital), patients' family and friends (who are worried, concerned, and often want to be involved in decisions about the patient), hospital technicians and support staff, radiology and laboratory, referring hospital or a hospital to which the patient may be referred, and many other entities including insurance companies and federal/state government (Medicare, Medicaid). Bottom line: hospitals have patients who are customers that 1) don't want to be there, 2) who don't pay for their own healthcare (either via insurance or charity care), and 3) who assess quality based on their assessment of interaction with caregivers rather than on the quality of clinical care delivered. While this may seem very different from classical views of the customer in manufacturing or traditional service firms, these customers also may not want to be at the supplier's site and may only go there when there is a problem, others (e.g., persons in other organizational units) pay the bills, but quality is first assessed based on technical characteristics and secondarily on interpersonal characteristics.

In the healthcare sector, from the hospital's perspective, patients are often called "customers," but processes to support treating them as customers are often weak or nonexistent. Subsequently, customer-centered behaviors by hospital staff are also in short supply. Classically, the patient in healthcare was viewed as someone who needed a service that the expert would provide with minimal input from the patient. This is the essence of the "medical model." This "medical model" was contrasted with the more participative "consulting model" by Kurt Lewin (as adapted by Wendell French and shown in Weisbord (1987) in the 1960s. In the medical model, the patient (or client) is told to "take your medicine." In the consulting model, the patient or client is involved in problem diagnosis and in taking action, monitoring the impacts of those actions, re-diagnosing, and cycling through the process iteratively.

Patient behavior now reflects more of the consulting model than seen in earlier years. A recent study of health-seeking behavior (Schuyler et al., 2003) showed that 62% of the U.S. population has used the internet to learn about their own medical condition. This is a shift in how the customer uses information to interact with a service provider.

III. Customer-Centeredness: Concept and Measurement

Customer-centeredness is not a new concept. One of the major thrusts of Total Quality Management (TQM) implementations stemming from the 1980s was the focus on the customer, especially the emphasis on defining quality from the customer's perspective.

Many concepts used widely in manufacturing and non-governmental service organizations lead the implementation in healthcare, which tends to lag by nearly a decade in many areas. For example, the healthcare sector began adopting the principles of activity-based costing (ABC) in the mid to late 1980s and this was clearly a response to Medicare's prospective payment plan that went into effect in 1983. Many manufacturing organizations had begun the ABC method in the late 1970s and early 1980s.

In 2001, the Institute of Medicine (IOM) published a treatise on the quality of healthcare in the U.S. Titled *Crossing the Quality Chasm: A New Health System for the 21st Century* (IOM, 2001), the volume defined patient-centeredness as the unifying and guiding principle to achieve the performance goals stated in the volume. The performance goals include: safety, effectiveness, timeliness, efficiency, and being equitable (Reid et al., 2005).

Recent emphasis on the patient as customer reflects a number of seismic changes occurring in the healthcare sector:

- 2006 marked the year that the first of 83 million “baby boomers” turn 60 and start accessing healthcare services more frequently.
- The U.S. has markedly higher prevalence of chronic disease (e.g., diabetes, heart disease, asthma) than seen in previous generations. These patients are not confined to hospitals—they lead nearly normal lives, hold jobs, but demand good information to support decisions leading to effective treatments aligned with their needs and expectations.
- Information technology, particularly the internet and the ability to interact with people around the globe on any issue, had led to a major change in the amount and type of information a patient brings to the physician's office and hospital. A recent study found over 60% of all patients have researched their medical condition prior to receiving treatment (Schuyler et al., 2003). Considering that many of these patients are over 65 and did not grow up with the internet, this is a sea change. Sites such as Healthgrades.com, Consumer Reports' MedicalGuide.org, and others provide the consumer with new, systemically-gathered and aggregated information to support their decisions. No longer is the doctor's word final—the patient-customer is an integral part of the caregiver team.
- Medical error has been estimated to cause 44,000-98,000 needless deaths in the U.S. (Kohn et al., 2000). This exceeds the 42,000 fatalities occurring on U.S. highways each year. Comparing medical error to the U.S. commercial aviation industry, where no commercial fatalities were recorded in 2002 and only 22 fatalities were recorded in 2005 (NTSB, 2006), one can see a tremendous opportunity for improvement. And, this motivates patients to seek information to improve their success rate and mitigate potential medical errors.

A. Development of a Patient-Centered Care Scale

Since one of the main study objectives was to measure the extent of patient-centered care (PCC), scale items were written and tested to form a scale. The PCC items were written based on the PCDT's charge for the organization, the Picker Institute's items on PCC, and based on the authors' experience in healthcare and survey measurement. Substantial revision of the Picker Institute items provided a basis for eight of the 13 questions used in the survey.

The Patient-Centered Care Scale was formulated based on the Picker Institute's scales (Jenkinson, Coulter, & Bruster, 2002) for measuring patient-centered care. The original Picker items were phrased as "yes/no" items. The Picker scales were modified to allow for easier measurement at the case organization. We reworded them to allow for a range of response (e.g., frequency of the behavior being performed), which also allowed for the use of more powerful statistical treatment of the resulting data. We deleted/modified these further based on the pilot test at the case organization. For example, the Picker item of "Did you have enough say about your treatment in the hospital?" was changed to "Patients are included in decisions about their care" in the survey given to employees. This was later modified for use with the patient population: "I was included in decisions about my healthcare throughout my visit/stay at the hospital." However, the patient survey was outside the scope of the current study. Questions requiring responses purely from a patient perspective were not used since our sample population was employees (e.g., Do you think the hospital staff did everything they could to help control your pain?). The PCC scale was designed using Likert-type response scales allowing for six possible response levels ("Strongly Disagree" to "Strongly Agree"). The full set of Patient-Centered Care items is shown in the Appendix.

1. Scale Reliability and Descriptive Statistics

The PCC Scale was designed for first use at the case organization, so assessing its measurement quality is essential for placing trust in its value as a measurement tool. As originally designed for the case organization, the PCC had a reliability of 0.88, based on Cronbach's alpha (1951). Cronbach's alpha is an "index of reliability for a set of items that indicates the extent to which items measure the same characteristic." (Veterans Administration, 2006). This was improved to 0.90 by removing Q23 ("The focus of the organization is on the *organization itself*."), Q20 ("The focus of the organization is on the *physician*"), and Q17 ("Patients end up having follow-up visits that could have been avoided by better coordination"). Items concerning the focus of the case organization ("focus items") were not part of the original scale and were not used in the calculation of PCC scale means. The results of analyzing these focus items are presented later in this paper.

Retention of PCC items is important for potential future use with the patient population. We included all items from the PCC scale to allow future investigation into the perception of patient-centered care among the patient population.

B. Focus Chart

Focus Chart refers to the mapping of results from the items concerning the focus of the organization—these items measured the extent of the focus on patient, physicians, employees, and the organization itself. Since respondents rated each of these items on a 6-point scale, there was no trading off of points as was done for the CVF questions (where 10 points were allocated across four responses). As such, a Focus Chart has a different shape, but similar structure, as the CVF.

C. Critical Incident Technique

Many tools exist to measure culture using predetermined categories and questions. Their main shortcoming is the inability to surface unanticipated findings. The tools assume that the universe of cultural understanding is contained in their structure and that an assessment using these tools will provide the necessary information to understand and manage the culture. After reviewing the many uses of Critical Incident Technique (CIT), we designed and applied a methodology to surface cultural information in a healthcare organization using critical incidents via a pencil-and-paper format (Mallak et al., 2003).

The CIT (Flanagan, 1954) offers a rich methodology for surfacing an organization's culture from a bottom-up perspective. Most culture measurement tools require the application of a set of predetermined cultural attributes:

Critical incident analysis allows for the emergence--rather than the imposition—of an evaluative schema and focuses on the events and dimensions of the patient experience that are most salient, memorable, and most likely to be retold to others (Ruben, 1993).

This allows easy comparison with other organizations and between units within the same organization. However, the predetermined set of attributes limits the scope of cultural findings to those found in the measurement tool. Categorizing responses from the CIT data collection identifies cultural attributes--many of which may not have been determined beforehand. The incidents themselves provide rich content to understand the culture and to make service improvements. Using incidents about excellent service sets a benchmark for employees to follow and communicates to them the service expectation in great detail.

Respondents were asked to share incidents where an employee's action either supported or worked against patient-centered care (PCC). Analysis of these incidents led to patient-centered care factors. Positive incidents show the strength of PCC and negative incidents show areas where interventions may be used to improve PCC.

D. Competing Values Framework

The Competing Values Framework (CVF) can be used to measure the culture of an organization. Pioneered by Quinn (1988) and used by many others since, the CVF produces a cultural profile covering four fundamental organizational types. See Figure 1. Starting in the upper left quadrant, the four CVF culture types are Cooperative Team, Open System, Rational Firm, and Stable

Hierarchy. The axes of flexibility-stability and internal focus-external focus determine the model's four quadrants.

The “competing” characteristic of this model concerns organizational values that are essentially opposites: flexibility-stability and internal-external focus. When one moves diagonally in the model – for example, from cooperative team to rational firm – the culture type is the polar opposite. These competing values emerge as conflict within the organization when working with individuals from two different culture types, particularly when they are polar opposites. Indeed, many classic conflicts between caregivers and the business components of the organization concern the cost of delivering care vs. the level of care nursing caregivers would like to deliver.

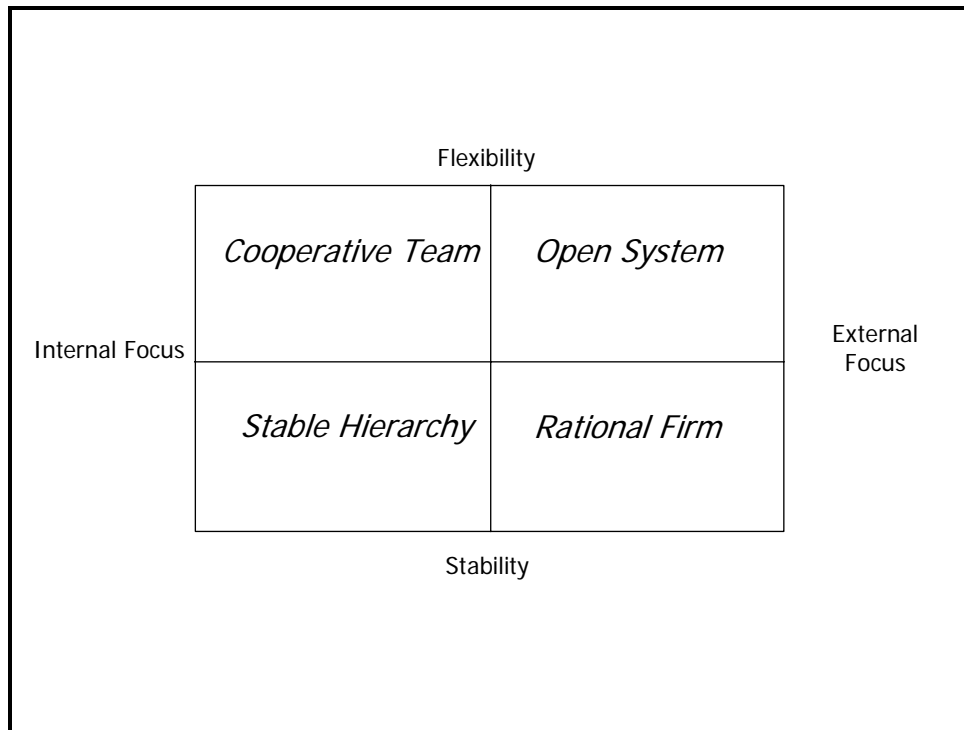


Figure 1. The Competing Values Framework defines four culture types based on axes of flexibility-stability and internal-external focus. (Adapted from Quinn, 1988.)

We used a modified set of scales from Quinn (1988) to produce CVF scores for the organization. Respondents allocate 10 points across four possible responses, representing the four different culture types in the CVF shown in Figure 1. Six items are presented to the respondent; mean values for each of the corresponding responses are used to build the CVF profile for the organization. Subsets of the data (e.g., work units) can also be profiled using CVF, thereby allowing a quick method of visually comparing one organizational unit to another, based on the cultural information contained in the CVF model.

IV. Application of Customer-Centered Measurement in an Organization

The tools related to Patient-Centered Care (PCC) were applied in a critical access healthcare organization. This organization use a dedicated design team that met regularly to improve the

focus of the organization to center on its patients. This section provides an overview of the application of PCC scales, focus charts, Competing Values Framework, and Critical Incident Technique to investigate the level of patient-centered care in this organization.

A. Hospital organized a Patient-Centered Design Team (PCDT)

The tools described earlier—Patient-Centered Care scales (PCC) and Focus Charts—were two of the analytical tools used to measure customer-centeredness in a healthcare organization. The case organization was a 25-bed critical access hospital located in the U.S. Intermountain West. “Critical access” is an official designation for a hospital serving a remote area, qualifying them for higher reimbursement of costs due to their lower volumes and therefore higher cost structures. The critical access reimbursement rates allow a small, but critical facility to remain more financially viable and therefore stabilize the mission of providing care to a population that would otherwise suffer delays in care and treatment as they drove 3-4 hours to the nearest major medical facility.

The hospital in this case was seeking information concerning the level of patient-centeredness. Their goal was to make PCC a major design criterion for proposed new facilities that may be built in the future and to provide a differentiation point against their competition in a neighboring community. An additional goal was to use PCC as an evidence base in the delivery of higher quality care and patient outcomes.

To support the patient-centered goal, the organization set up a Patient-Centered Design Team (PCDT). The PCDT met on a regular basis to design strategies and actions to advance the PCC goal within the organization. One of the PCDT’s first actions was to work with the study’s authors on the design, testing, and administration of an instrument to measure PCC in their organization.

Healthcare organizations must meet stringent accreditation requirements, as judged by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO). JCAHO had recently added new requirements for patient safety and medical error to their goals and accreditation process. This points up a key difference between healthcare organizations and most other service providers: such regulatory actions are not likely in manufacturing, retail, education, other service industries because errors and lack of focus on the customer don’t cause immediate harm and the market will resolve these over time. However, extreme situations as those encountered in healthcare bear interesting evidence-based implications for sectors where customer focus is less likely to cause harm.

The instruments discussed earlier—PCC scales and Focus Charts—were among others in a larger survey instrument administered in the spring of 2005. The survey produced a 44% response rate, which was relatively high due to the efforts of the chief operating officer’s direct involvement in promoting the survey effort and the small size of the hospital (N=225 employees). The instrument was pilot tested and revised prior to full implementation. The research protocol was approved by the appropriate Human Subjects Institutional Review Boards.

B. Results

The PCC scale had an overall mean of 4.22 and this mean ranged from 3.97 for Managers to 4.43 for Others. Individual items in the scale ranged from 3.26-4.75, as shown in Table 1. This is on a 1-6 scale where 6 is high. This scale shows room for improvement across the organization. There were no significant differences on the PCC scale by position or by year of hire, based on analysis of variance (ANOVA).

	Overall Mean
Patients are included in decisions about their care.	4.75
Patients treated with dignity and respect.	5.16
One physician coordinates care.	5.08
Patients receive as much information as they want.	4.71
Hospital staff available to discuss personal concerns.	4.16
Patients willing to discuss personal concerns [reverse coded].	3.26
Patients helped with eating, etc in timely fashion.	4.67
Patients told what to expect with their illness.	4.32
Family members or friends can talk with physician.	4.39
Physicians ask about living situation that affect health.	4.19
Patients' follow-up visits not required due to good coordination [reverse coded].	3.59
Patients know what danger signals to look for.	4.42
Patients know what medication side effects to look for.	3.97

Table 1. Mean responses for Patient-Centered Care (PCC) scale items.

a) Confirmatory Factor Analysis

We ran a confirmatory factor analysis (CFA) on the PCC scale to determine if the larger scale broke down into factors or subscales. CFA is a statistical tool that clusters items in a larger scale based on the patterns produced by responses. People tend to respond similarly to similar items, and CFA is a statistical method for detecting and identifying these patterns. We used the entire set of PCC items that were derived from the Picker questions, which excluded the focus items (e.g., “The focus of the organization is on the *physician*.”).

The CFA showed PCC has three factors. These factors work together to explain nearly two-thirds of the variance of the construct of patient-centered care. See Figure 2. Each factor is listed with the amount of variance explained by the factor. *Continuity of Care* explains over four times as much variance as *Decision Making and Respect*. The implication of this finding is that actions

to improve patient-centered care that address items in Factor 1 will have much greater leverage in producing desired change in patient-centered care at the case organization.

All factor means are based on a 6-point scale, with 6 being high. Factor 1, *Continuity of Care*, had a mean of 4.31 and explained 47.33% of variance in Patient-Centered Care. Items in Factor 1 concern information and post-discharge care, extending the care beyond the hospital’s physical boundary, as well as how the hospital makes information and support available to the patient while they are in the hospital.

Factor 2, *Decision Making and Respect*, had a mean of 4.98 and explained 10.51% of variance in Patient-Centered Care. Items in Factor 2 concern the inclusion of patients in decisions about their care, having a lead physician coordinate care, and treating patients with dignity and respect.

Factor 3, *Comprehensive Care*, had a mean of 3.82 and explained 8.01% of variance in Patient-Centered Care. This factor contains items concerning avoidance of follow-up visits, patients’ ability to share their concerns, and receiving timely help with eating, bathing, or bathroom use.

Factor 1: Continuity of Care (47.33%) mean=4.31

No.	Item	Loading
Q16	Physicians ask patients about family or living situations that might affect their health.	0.8369
Q15	Family members or close friends have opportunities to talk with the patient’s physician.	0.7583
Q11	Patients know how to find someone on the hospital staff to talk with about their personal concerns.	0.5885
Q19	Patients know what medication side effects to look out for when they go home.	0.5758
Q10	Patients receive as much information as they want about their medical condition and treatment.	0.5715
Q18	Patients know what danger signals to look out for when they go home.	0.5688
Q14	Patients are told what to expect with their health or illness in the future.	0.5552

Factor 2: Decision Making and Respect (10.51%) mean=4.98

No.	Item	Loading
Q9	Each patient has a lead physician who coordinates care for that patient.	0.7620
Q8	Patients are treated with dignity and respect.	0.7393
Q7	Patients are included in decisions about their care.	0.7206

Factor 3: Comprehensive Care (8.01%) mean=3.82

No.	Item	Loading
Q17R	Patients end up having follow-up visits that could have been avoided by better coordination.	0.8540
Q12R	Patients who have concerns they want to discuss may keep those concerns to themselves.	0.7436
Q13	Patients are helped in a timely fashion with activities such as eating, bathing, or getting to the bathroom.	0.6652

Note: Q17R & Q12R refer to the reverse-coded responses, where higher numbers are “better.”

Total variance explained by these three factors is 65.85%.

Figure 2. Results of Confirmatory Factor Analysis showed three Patient-Centered Care factors or subscales.

In total, these three factors explained 65.85% of the variance in Patient-Centered Care (Figure 3). As stated earlier, the implication of these findings is that actions taken to improve items in

Factor 1, *Continuity of Care*, will have much greater leverage to induce positive change in the level of Patient-Centered Care at the case organization.

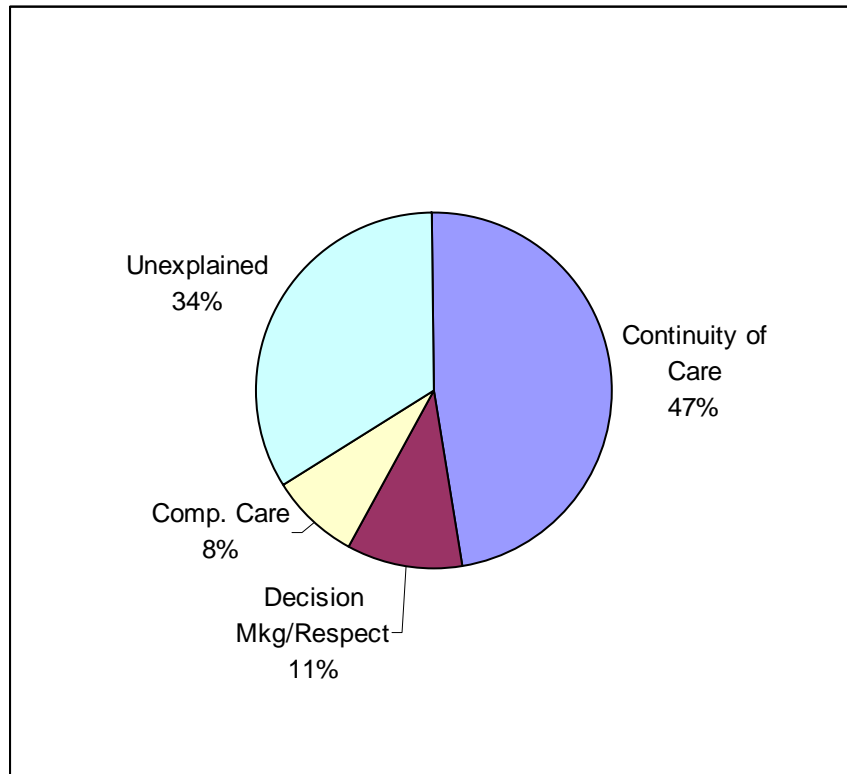


Figure 3. The three factors account for nearly two-thirds of the variance in Patient-Centered Care.

Figure 4 shows that the Patient was rated first, followed by Organization and Physician, bearing some insight into the current level of Patient-Centered Care at the organization. That the employee was rated the lowest on the Focus Chart is not a cause for alarm—as healthcare organizations embrace the Patient-Centered Care philosophy, numerous tradeoffs must be made. For example, in a new built environment, do we provide the employee with a lounge containing windows with great views or do we reserve that view for several patient rooms? There is a growing body of research that provides evidence that rooms with a view result in better outcomes for patients, in terms of pain medication use and length of stay. If the organization is truly patient-centered, it will side with the patient on these decisions, when there is no alternative to meet both the patients’ and the employees’ needs.

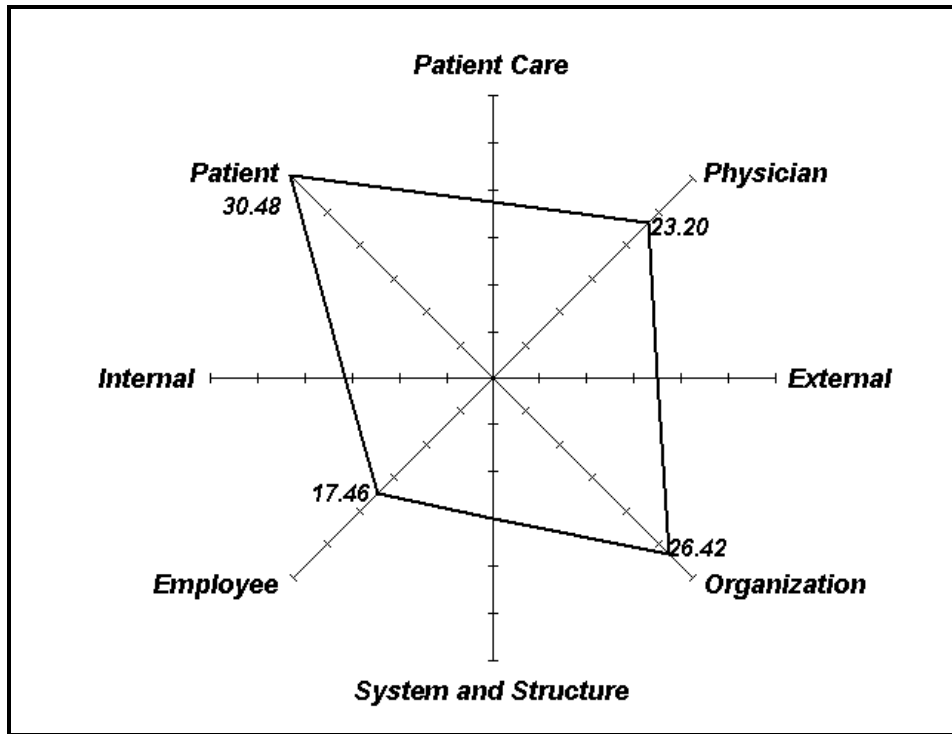


Figure 4. The organization focus chart shows the Patient is rated first, followed by Organization and Physician.

C. Methodological Issues in Customer-Centered Measures

1. Employees rated customer-centeredness.

In this case study, the organization opted to have its employees respond to questions concerning how well patients/customers were treated. They did not go directly to the customer. This introduces the bias of the employee, who is often measured on customer satisfaction. The organization in this study did follow up on this concern. They had their Patient-Centered Design Team (PCDT) work with the senior author to redesign the PCC scales for use from the customer perspective. These scales were pilot tested and the organization has just begun collecting data from the patient.

2. Blending qualitative and quantitative measurement results.

Quantitative measures can only report what its items cover. So, if a critical item is discovered during the study, it cannot be systematically studied unless the survey instrumentation is redesigned, pilot tested, and redeployed. This study used a structured qualitative technique (Critical Incident Technique or CIT) to identify critical customer-centered issues from the bottom-up. Bringing these two types of results together—qualitative and quantitative—often presents challenges as the interpretation requires input and involvement of the organization’s leadership. For this organization, we constructed a mapping of the CIT results against the PCC factors to show the relationships between the qualitative and quantitative measures (See Figure 5.)

Our two independent means for identifying components of PCC—via Critical Incident Technique and Confirmatory Factor Analysis of the PCC items—produced two different sets of PCC elements. In Figure 5, the CIT categories are mapped onto the PCC factors. PCC-Performance maps with Factor 1—Continuity of Care and Factor 3—Comprehensive Care. PCC-Teamwork and Innovation maps with Factor 3—Comprehensive Care. PCC-Task maps with Factor 1—Continuity of Care. PCC-Relationship maps with Factor 2—Decision Making and Respect. This mapping will aid the analysis of future measurements.

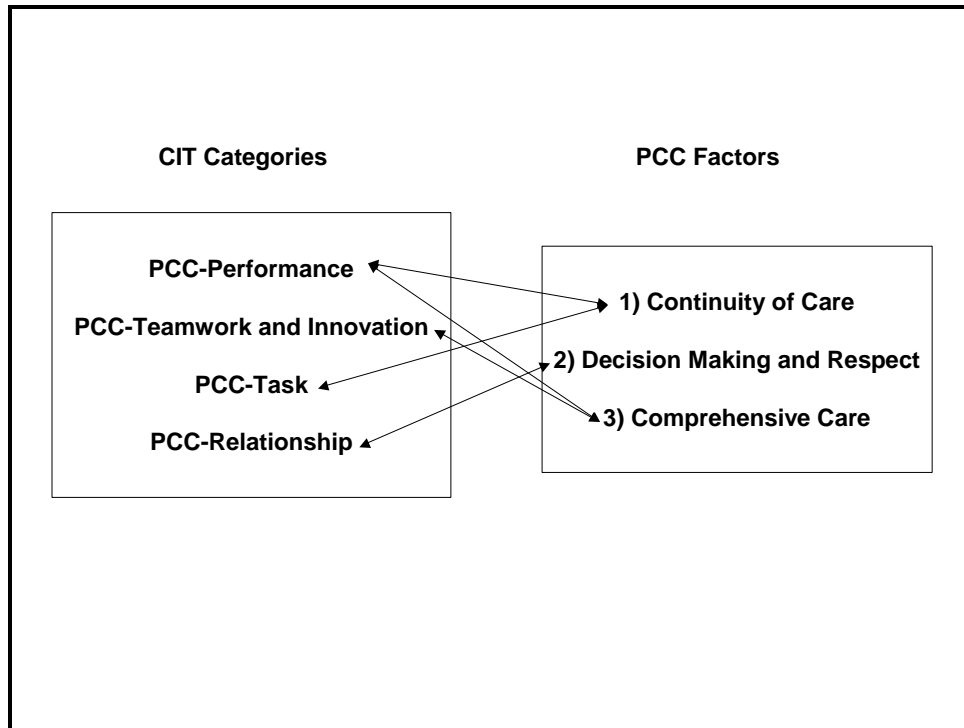


Figure 5. The CIT categories map onto the PCC factors.

V. Implications for Engineering Managers

This study obtained evidence for Patient-Centered Care at the case organization. We’ve summarized the sources, findings, and implications concerning Patient-Centered Care in Figure 6. The four measurement tools (“Source” of findings and implications in Figure 6) included the Patient-Centered Care (PCC) Scale, the Focus Chart, Critical Incident Technique (CIT), and the Competing Values Framework (CVF). Each of these tools contributes to our knowledge concerning understanding how to use patient-centeredness concepts from healthcare to the more general concern of customer-centeredness in other settings.

The greatest leverage point in the PCC scale was *Continuity of Care*, explaining almost half of the variance in patient-centered care. Based on the items constituting *Continuity of*

Care, the following implications are identified for customer-centeredness: customers know who to contact when they have questions or concerns, customers know what to look out for in terms of potential problems with the product or service, the organization designs and delivers the product/service to best fit the intended use and the environment in which it is used, information about the product/service and how its performance can be optimized or at least improved in the intended application.

The Focus Chart shows just how customer-centered an organization truly is, based on responses from the surveyed population. If the organization has customers rated highest on this instrument, then the implication is to continue efforts to keep the customer first. If the customer is not first, efforts need to be taken to elevate the customer's focus on this chart.

Like the Focus Chart, the Competing Values Framework (CVF) shows which culture type is dominant in an organization. The Cooperative Team culture—one that values flexibility and is focused on internal control and integration (“organizational cohesion”)—is the best match for an organization seeking to be customer-centered. Culture types focused on stability (Stable Hierarchy and Market cultures) don't respond as effectively to customer's needs as those focused on flexibility. A recommended secondary culture type is Rational Firm, because this type of orientation is helpful when implementing new standards and practices associated with customer-centeredness.

Additionally, the culture type emphasizing organizational cohesion rather than interacting or competing with others is more amenable to customer-centered practices. For example, Microsoft is often viewed as an Open System culture on the CVF. Open System suggests competing with others and being flexible. Microsoft, as well as others in this quadrant, are known to dominate their environment, or at least seek this domination. This type of culture may or may not be customer-centered. Is it customer-centered to make it difficult to integrate another company's product with yours? Is it customer centered to sell off a business because it is not number one or number two in its respective market? The answers to these questions are both “no,” typically. The implication for engineering managers is that the Cooperative Team culture type should be dominant in a customer-centered culture, followed by Rational Firm.

Critical Incident Technique (CIT) produces results unique to a specific organization. As such, the case study *results* will not be very useful in other settings. What the CIT *does* bring to the study of customer-centeredness is a rich set of stories detailing how well (or not well) the customer is treated in the organization. This technique is labor-intensive, but provides richness of detail that numerical techniques cannot capture. The result of CIT is a bottom-up view of a particular study area, such as customer-centeredness. Read more about using CIT in organizations in Mallak et al. (2003, CIT).

Source	Finding	Implication For Engineering Managers
PCC Scale	<i>Continuity of Care</i> provides leverage for PCC.	To get the most impact, focus first on improving items in Factor 1: <i>Continuity of Care</i> . These concern providing information to the customer on how to best use the product/service in their intended application area.
Focus Chart	Patient was rated first, with Organization and Physician following as the focus of the organization.	If the organization has customers rated highest on this instrument, then the implication is to continue efforts to keep the customer first. If the customer is not first, efforts need to be taken to elevate the customer's focus on this chart.
CVF	CVF profiles show Cooperative Team as the dominant culture type.	The organization values working in a Cooperative Team culture throughout the organization and is less stymied by organizational structures, policies, and procedures than other healthcare organizations. This cultural type is a natural fit for a PCC intervention. However, the introduction of standards and expectations concerning PCC demands an increased focus on "Rational Firm" culture type. Some training or indoctrination to the use of standards for non-clinical measures may be helpful.
CIT	The Mission influences positive behavior. PCC must focus on the task and relationship of providing care to the patient.	CIT produces results unique to a specific organization. This technique is labor-intensive, but provides richness of detail that numerical techniques cannot capture. The result of CIT is a bottom-up view of a particular study area, such as customer-centeredness.

Figure 6. Summary of Findings Concerning Patient-Centered Care and Their Implications for Engineering Managers.

VI. Moving Toward Customer-Centeredness

The customer is becoming more involved in the specification of goods and services prior to delivery. Therefore becoming customer-centered is becoming less of an option and more of a requirement. The tools used in this case application represent just a few of the many options engineering managers can use to measure customer-centeredness. However, these tools cover some of the essential quantitative elements of customer-centeredness, at least as defined in a healthcare setting, and demonstrate the logic employed in converting these measures from the employee perspective to the customer perspective. In addition, the use of bottom-up tools like Critical Incident Technique (CIT) provides rich data that would not be captured using a predetermined set of scales.

An organization focused on becoming more customer-centered must identify the cost-benefit of applying these tools. Customized tools take time to develop and must be pilot tested, but provide data specific to the organization. Rich, qualitative tools such as CIT can be used in a pencil-and-paper format as part of a larger questionnaire (Mallak et al., 2003), but the data analysis is more labor intensive compared with analyzing numerical

responses to survey items. The benefit of discovering new information concerning your customers must be weighed against the costs of obtaining, analyzing, and acting on that information. The application of these tools tests the values of the organization—those who clearly value feedback from the customer will spend the resources necessary to get actionable information. Others may merely be trying to meet regulatory or accreditation/organizational requirements (“the law”) rather than truly focusing on improved customer experiences (“the intent”).

For an organization to become more customer-centered, several steps must be accomplished:

First, the organization must define its customer. In the hospital case organization used in this paper, the customer was defined as the patient. Alternative customer definitions have focused on the payor/insurer, but these parties are not the end user of healthcare services. Similarly, a manufacturer must define its customer—is it an OEM or is it the end user or is it a supplier upstream in the supply chain? The definition of customer is essential to developing an effective customer-centered effort.

Second, a set of measurement tools must be identified and modified to meet the measurement objectives. What does it mean to be “customer-centered” in a specific industry? In healthcare, JCAHO and regulatory bodies have defined requirements concerning patient safety, caregiver communications, medication reconciliation, and other patient-centered attributes. What is your organization or industry required or expected to deliver to the customer? Once you can answer this question, the choice and modification of measurement tools should be evident.

Third, the organization must measure customer-centeredness using the tools it selected and modified. Ideally, these tools should be pilot-tested before put into full-scale use. What results do the tools provide on customer-centeredness? There will not be one answer; there will be a body of evidence to either support or work against the notion that the organization is customer-centered. Often, being customer-centered means making decisions that favor the customer over the employee. For example, one healthcare organization we worked with was building a new main hospital facility. The decision was made to have all patient rooms have external views of something aesthetic, rather than looking at a parking lot or the side of a building. This meant contracting with artists to produce some interesting reliefs and other art forms to place on the exterior of building walls that face patient rooms. This also meant that staff lounges were built in interior space with no windows.

The customer wants to have a greater role in the relationship. How will/can the organization adjust to this new expectation? Don’t wait until you are required to become more customer-centered due to regulatory or competitive pressures or a crisis. Get ahead of your competitors and strategically orient the firm’s operational performance by finding out what it means to be customer-centered with current and prospective customers *now*.

VII. References

- Cronbach, L. J. (1951). Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*, 16, 297-334.
- Flanagan, J. C., (1954). "The Critical Incident Technique," *Psychological Bulletin*, 51(4), 327-358.
- Hayes, B. E. (1992). *Measuring Customer Satisfaction: Development and Use of Questionnaires*. Milwaukee: ASQC Quality Press.
- Institute of Medicine. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, D.C.: National Academies Press.
- Jenkinson, C., Coulter, A. A., & Bruster, S. (2002). The Picker Patient Experience Questionnaire: Development and Validation using Data from in-Patient Surveys in Five Countries. *International Journal for Quality in Health Care* 14(5), 353-358.
- Kohn, L.T., Corrigan, J. M., & Donaldson, M. S. (2000). *To Err is Human: Building a Safer Health System*. Washington, D.C.: National Academies Press.
- Mallak, L. A., Lyth, D. M., Olson, S. D., Ulshafer, S. M., & Sardone, F. J. (2003). Diagnosing Culture in Healthcare Organizations Using Critical Incidents. *The International Journal of Health Care Quality Assurance*, 16(4), 180-190.
- NTSB (National Transportation Safety Board). Aviation Accident Database and Synopses. Retrieved March 3, 2006 from <http://www.nts.gov/ntsb/query.asp>.
- Quinn, R. E. (1988). *Beyond Rational Management*, San Francisco, Jossey-Bass.
- Reid, P. P., Compton, W. D., Grossman, J. H., & Fanjang, G. (eds.). (2005). *Building a Better Delivery System: A New Engineering/Health Care Partnership*. Washington, D.C.: National Academies Press.
- Ruben, B. D., (1993). "What Patients Remember: A Content Analysis of Critical Incidents in Health Care," *Health Communication*, 5(2), 99-112.
- Schuyler, K. & Knight, K. M. (2003). What Are Patients Seeking When They Turn to the Internet? Qualitative Content Analysis of Questions Asked by Visitors to an Orthopaedics Web Site. *Journal of Medical Internet Research*, 5(4), article e24.
- U.S. Department of Transportation's National Center for Statistics and Analysis. Fatality Analysis Reporting System Web-Based Encyclopedia. Retrieved March 3, 2006 from <http://www-fars.nhtsa.dot.gov/>
- Veterans Administration Health Services Research and Development. (2006). Retrieved 6/23/05 from http://www.measurementexperts.org/instrument/term_pocket_terms.asp.

Weisbord, M. R. (1987). *Productive Workplaces: Organizing and Managing for Dignity, Meaning, and Community*. San Francisco: Jossey-Bass.