

QFD Applications in Health Care and Quality of Work Life

Glenn H. Mazur,¹ Jeff Gibson,² and Bruce Harries³

Introduction

QFD, as developed in Japan, addresses both design of products (hardware) and improvement of business processes (narrowly defined QFD). This has facilitated its use in service industries because QFD has the tools to look at customer needs and measurements as well as the tools to describe and assure the quality of human tasks, as will be shown later.

Two case studies are presented here to illustrate the author's comprehensive approach to service QFD. In the first case, a medical foot clinic is repackaging and relocating its operations to provide more comprehensive and satisfactory service to both its patients and physicians. The second case is the application of QFD to improving employee satisfaction in a Canadian telephone company.

Baptist Health System: The Princeton Foot Clinic

Increasing competition, shrinking profitability and the prospect of health reform are forcing hospitals to differentiate in the delivery of services. One way to achieve differentiation is to constantly deliver what customers want, and even further, what will delight them. QFD ensures clinicians hear the voice of the customer above the "high tech" din of health care.

The Princeton Foot clinic is a spin-off of existing services in Princeton Baptist Medical Center's physical therapy department. Repackaging the service provided an opportunity to design in quality using QFD. A foot clinic task force consisting of clinical, marketing, and total quality management staff was trained in QFD. The task force confirmed demanded quality items related to timeliness, convenience and courtesy, and discovered unspoken items such as flexibility in the referral processes and explanation of procedures. Key processes identified for the focus of resources were a simple, efficient referral process, efficient, flexible scheduling, and a streamlined patient summary.

Baptist Health System (BHS) began its quality journey in 1989 with quality training conducted by 3M. Since that time, BHS has developed its own approach to continuous quality improvement called TeamWorks for Quality. They decided to study QFD for the following reasons.

1. Introducing QFD to the organization would be another step toward TQM.
2. QFD would reduce waste and rework by designing quality into the services.
3. Help clinicians to see the full spectrum of customer satisfaction and become more creative.
4. Differentiate BHS services from those of competitors.

The Princeton Foot Clinic (PFC) was selected as the first project since their physical therapy staff already had an excellent reputation among referring physicians. It was under-utilized by BHS's own medical staff, however, who usually referred patients to an orthopedist who often did not want to see many simple yet time-intensive foot patients. The PFC was being redesigned as a separate service for the first time. The QFD project was conducted from November, 1993 to April, 1994.

¹ QFD Institute Executive Director, Japan Business Consultants, Ltd. President

² Baptist Health System, Birmingham, Alabama, USA

³ TELUS Corporation, Edmonton, Alberta, Canada

Management support for QFD

This turned out to be a weak point but was not apparent until later in the process. While the director of physical therapy (PT) endorsed the use of QFD in the development of the clinic, her vision of the scope of the PFC would ultimately differ from that of the task force. This difference later led to certain constraints on the design, resulting in a phased-in implementation.

Customer deployment

The PFC task force's first step was to identify a mission or purpose of the new service as "to provide accurate, convenient and effective foot assessment, treatment, and education for the patients of BHS physicians, using resources in a cost-effective manner." Key goals were to contribute to BHS profits, reduce costs, improve service efficiency, retain foot care patients within the BHS system (i.e. increase market share) and sustain high customer satisfaction.

In order to achieve these goals, the task force identified the customers who would contribute the most. With the help of the PFC director, they identified those areas where they were most competent and the customers who were most likely to want those competencies (Fig. 1). With limited resources to collect customer data, the task force chose to focus on those customers who wielded the most choice in the selection of a foot care provider - campus physicians. Since they planned to phase in the clinic, off-campus physicians were targeted for Phase 2 and self-referrals for Phase 3.

Fig. 1. Core Competencies	Key Customers
Staff experienced with foot problems	Referring, non-orthopedic physicians (on campus)
Assessment skills	Referring orthopedists (on campus)
Treatment skills	Foot injury patients
Patient education skills	Diabetic patients
State-of-art techniques and equipment	Chronic foot pain patients

Physician attitude surveys indicated there was a strong link between physician satisfaction and patient satisfaction so initial customer requirements gathering activities included both on-campus physicians and their patients. The task force visited physicians on their rounds and in their offices; current PT patients were interviewed as well. The situation during which data is taken can help elucidate a true understanding of the issues, so contextual data was taken as well. A sample of context and raw customer data is included in the following Customer Context Table (Fig. 2.). The reworded data reflects additional latent needs underlying spoken needs.

Fig. 2. Customer Context Table (partial)

Voice of the Customer	Demographics	5W1H Context						Reworded Data
		Who	What	When	Where	Why	How	
How can I avoid coming back?	Female, 33, diabetic, educated as dietitian	Diabetic patient	Preventive treatment	periodic, annual?	At MD office	Prevent complications	Outpatient	Give me clear explanations. Prevent further problems.
Sometimes I have to wait almost an hour to be seen.								I am seen at my appointed time.
I want to know how I am doing.								I want full knowledge of condition. I want to know what to expect.

The foot clinic task force found customers to be very talkative and frank about their experience with foot treatment, and what they would like to see done differently. Thus, our reworded data included not only quality related needs, but also needs related to process and performance, failure, and even

suggestions for ways to improve. Comprehensive QFD allows us to deploy quality needs, performance needs, processes, failures, and solutions separately which makes deployment analysis clearer and faster. The Customer Voice Table (Fig. 3.) was used to sort the reworded data items and look for additional ones.

Fig. 3. Customer Voice Table (partial)

Benefits	Features				
	Demanded Quality (Qualitative)	Quality Attribute (Measurable)	Function/Process	Failure	Other
Give patients clear explanations.			Prevent further problems		
I am seen at the appointed time.					
I want full knowledge of my condition. I want to know what to expect.					

The demanded quality items were arranged using the KJ method or affinity diagram with headers like “Patients treated respectfully,” “Effective communication,” “Timeliness,” “Convenience,” and “Purpose accomplished.” A tree was used to improve the hierarchy and to identify any missing items. For example, referring physicians were concerned about patients being returned to them because sometimes patients get pulled into the hospital system and end up seeking all their medical care from on-campus physicians. If they never come back, the referring physician loses this patient to the hospital system.

Quality Deployment

The quality table (Fig. 4.) translates the demanded quality items into measurable characteristics or attributes of quality. Services are better measured for causal attributes than results, but this can be difficult. For the customer demanded quality “I am seen at my appointed time,” strongly correlated quality attributes included “patient load limit” and “turn-around time of treatment.” Two customer questionnaires were conducted to ask physicians and patients to rate the importance of the demanded qualities. In virtually all items, the ratings of the physicians and patients were very similar, an unexpected but not unsurprising result. It was thus possible to combine the values of their responses. After an extended and lively discussion, the task force concluded there was no direct competition so this data was not included in the assessment.

Function Deployment

Using function analysis and process analysis, clinic activities were analyzed

Fig. 4. Princeton Foot Clinic Quality Table (partial)

PFC Quality Chart
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WHATs vs. HOWs
 Strong Relationship: ○ ⊗ 9
 Medium Relationship: △ ⊙ 3
 Weak Relationship: △ 1

	Physician relations	Frequency of referral process update	Turnaround time on pt. records	Scheduling	Patient load limit	Turnaround time of treatment	Importance Rating	Current Level	Plan	Improvement Ratio	Sales Point	Absolute Wt.
Patient treated respectfully												
Privacy						△	4.2	5	5	1.0		4.2
Courtesy						⊗	4.8	5	5	1.0		4.8
Timeliness												
I know appointment length						○ ⊗	5.0	4	4	1.0		5.0
I am seen at appointed time						⊗	5.0	4	5	1.3		6.3
Convenient												
No prior work up is ok		⊗					4.0	4	4	1.0		4.0
Easy parking						△	5.0	3	5	1.7		8.3
Easy to make appointment		○				△	4.0	4	4	1.0		4.0
Quality Attribute Abs. Wt.		268.7	119.8			233.8						
Current		2.0	2.0			12.0						
Target		0	0			5						
Unit	times/yr						0.8	1.0				
	Days											
	Piv/yrth											
	Hours											

for these key functions: process paperwork, interact with family and patient, maintain documentation, and update physicians. Two matrices were created with demanded quality x functions and quality attributes x functions. The first matrix uncovered the need for new functions — “send patient summaries to referring MDs,” and expand “update physicians” to “update key staff.” The priority functions from these two matrices were “treat patients” and “assess patients.” Other key functions were “schedule appointments” and “update scheduling staff of changes.” These correlate back directly to “patient load” and thus to “I am seen at my appointed time.”

Reliability Deployment

To better understand where a new process could fail to perform the above functions, failpoints were brainstormed, taken from complaint letters, and then grouped with the KJ method and the tree. Two failpoints stood out among the rest — when the patient has to return for treatment of the same problem and communication gaps between physician and scheduling staff.

New Process Deployment

A team of PFC physicians, therapists, and staff examined the key functions and failures in order to propose new processes by which the functions could be performed. Process flow charts were made and the processes were evaluated against the quality attribute target values in the quality table and the best was selected.

Task Deployment

The new process consists of a series of tasks performed by individuals in the clinic. Each task was assigned a person responsible, a time frame, a location, a performance level, and skill requirements. Once entered into a database, a sort routine was done on each of the above categories to produce job descriptions, staff schedule, a floor plan, training requirements, etc.

Conclusion

The relocation of the PFC began in June, 1994. It has been progressing as planned. The QFD team learned that the great attention to detail is both rewarding and maddening. QFD should be thought of as neither a journey nor a destination, but a vehicle to rely upon every time you venture into new product development.

TELUS Corporation

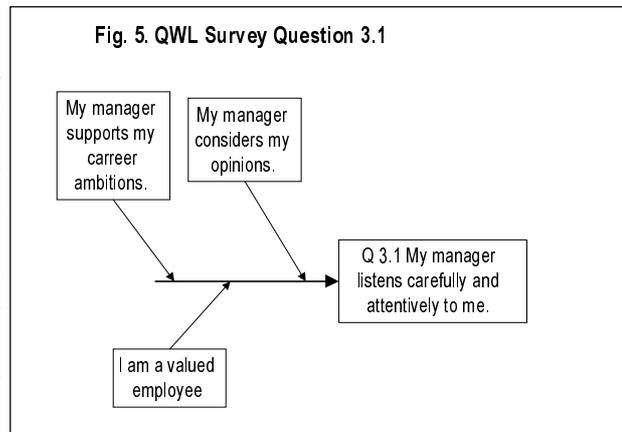
TELUS Corporation is the parent company of the regional telephone utility in Alberta, Canada. In recent years, Canada has been deregulating some utilities which has meant that this former monopoly now faces competition. Recognizing that success must now come from satisfying customers rather than regulators, TELUS began using QFD in 1994 to better understand the needs of its customers and to evolve their organization to better meet these needs. Part of their focus has been on improving employee relations, which they refer to as Quality of Work Life (QWL). TELUS recognized that just as the marketplace allowed customers to choose the best telephone services, the job market allowed employees to choose employers with the best management skills. For TELUS to satisfy its telephone customers, good management was necessary to attract and retain good employees.

This study began with their annual QWL survey of all employees conducted by Novations of Provo, Utah. This survey asks employees to rate 67 aspects of their workplace as well as four open response questions. Novations then provides scores that reflect where improvement is most needed. After past

surveys, management had found it difficult to respond with systemic changes, partly because questions like “My manager listens carefully and attentively to me” did not directly clarify what needed improvement. QFD was seen as a method to translate the survey results into action.

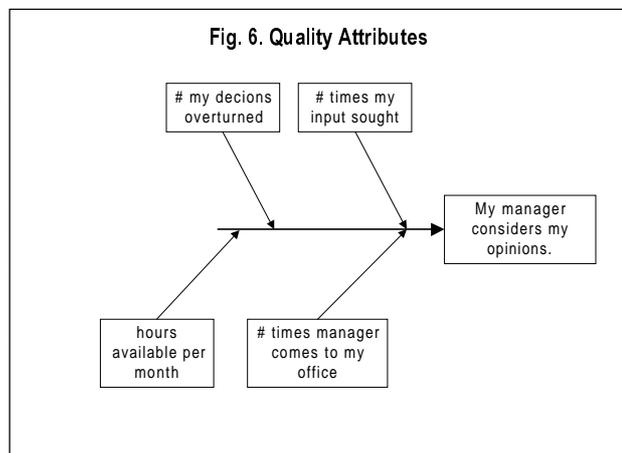
QWL Deployment

The 29 most critical survey items were translated into requirements using cause-and-effect diagrams (Fig. 5.). The requirements were sorted in a customer voice table and the demanded quality items were sorted with the affinity diagram and tree. A prioritization matrix was constructed with the survey questions, survey scores, and comparative scores of other companies surveyed by Novations in the rows and the demanded quality items in the columns. One key demanded quality item was “My manager considers my opinions.”



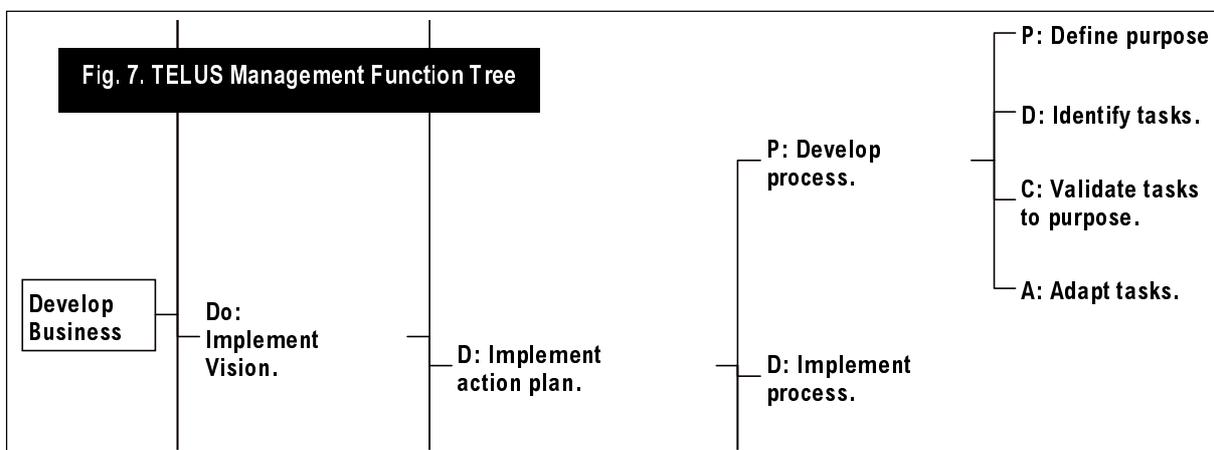
Quality Deployment

As noted in the Princeton Foot Clinic case, determining causal and measurable quality attributes can be difficult for services. The QWL team members in this case, however, were the customers of the TELUS management. Surprisingly, they had little difficulty in coming up with creative but very measurable quality attributes. Demanded quality items and weights were entered into a prioritization matrix with the quality attributes. Performance targets for key quality attributes were determined.



Function Deployment

Performance targets indicate how well the new process must perform; functions show what processes will be improved first. TELUS had initiated in 1993 a “Role of the Manager Feedback Tool.” Based on this tool which included a detailed description of the management function, a function tree was created to assure that the PDCA was being followed and that no functions were missing (Fig. 7.). A



prioritization matrix was created with demanded quality items vs. functions to focus on improving key functions. The highest improvement priority was “validate task to purpose” which meant that many management and employee tasks were not clearly tied to the purpose or vision of TELUS.

Reliability Deployment

Next the QWL team tried to predict potential management failpoints to assure they would be avoided in any new management process. A fault tree was developed and failpoints were prioritized in a matrix with demanded quality in accordance to their potential to negatively impact management. The critical failures included “creating barriers to success” and “breaking promises and commitments.”

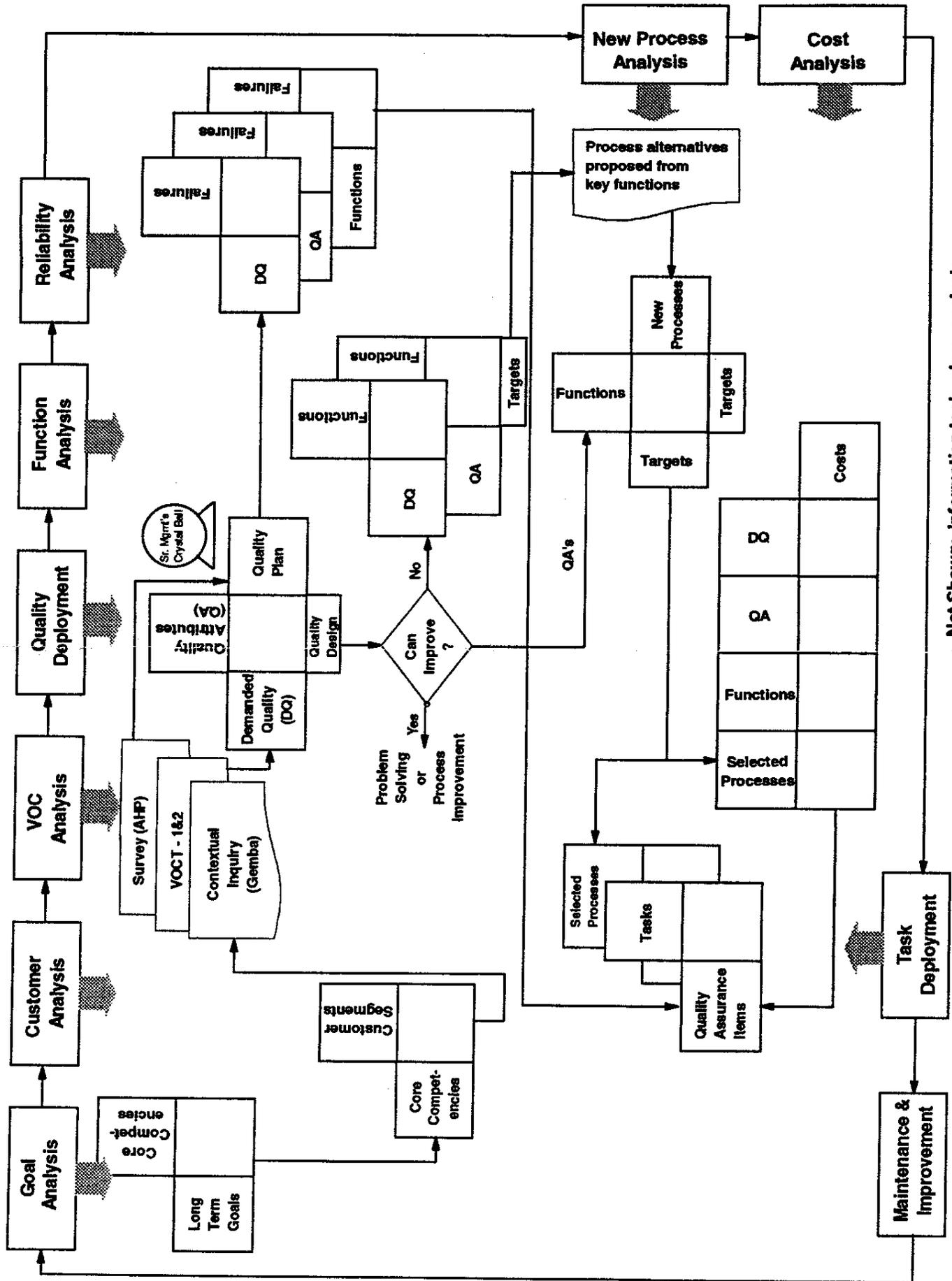
New Process Deployment

The QWL team is currently working with management to develop new approaches to involving employees in achieving company vision. They must seek employee input to validate employee tasks with the vision, remove barriers to success and keep commitments, and in this way demonstrate that they value employee opinions. The 1995 QWL survey should confirm progress by an improved score on survey question 3.1.

Conclusion

Both these cases illustrate that comprehensive QFD can be effectively applied to service (internal and external) processes. The same procedure is also adaptable for Business Process Reengineering. Figure 8 illustrates a concept flow of comprehensive service QFD.

Quality Assurance Roadmap



Not Shown: information technology analysis

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About the authors

Glenn Mazur has been involved with QFD since its earliest years in the United States. He is President of Japan Business Consultants, Ltd. where he provides QFD facilitation and training and translation of Japanese quality literature. He is the Executive Director of the QFD Institute, a nonprofit organization dedicated to advancing QFD in North America. He is the Program Chair of the Symposium on Quality Function Deployment held each June in Novi, Michigan. He is an Adjunct Lecturer of Total Quality Management at the University of Michigan College of Engineering. Mazur holds a Master's Degree in Business Administration and a Bachelor's Degree in Japanese Language and Literature, both from the University of Michigan. Questions or comments regarding this paper should be directed to him at +1 (313) 995-0847, fax +1 (313) 995-3810, or email to qfdi@nauticom.net.

Jeff Gibson is Corporate Director of Marketing and Planning at Baptist Health System, a medical center located in Birmingham, Alabama.

Bruce Harries is Director of Quality at TELUS Corporation, received an MBA from I.M.E.D.E. in Lausanne Switzerland and is a student of the teachings of Edwards Deming.