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New and Proven Approaches to Continual Quality Improvement

By Beth Cudney, PhD, Guest Editor



The QMD is partnering next year with the Statistics Division to host a conference called the Institute for Continual Quality Improvement. For this special preconference edition of the *Quality Management Forum*, several experts were invited to submit articles on topics related to the theme of "New and Proven Approaches to Continual Quality Improvement" and its importance to organizational excellence. Continual improvement implies prolonged, repeated instances of quality improvement illustrated by an ongoing sequence of improvement projects. Quality pioneer Joseph M. Juran admonished us long ago that "quality improvement happens project by project and in no other way."

The authors' areas of expertise include quality management and process improvement in diverse fields. The common threads that link these articles are management principles, strategies, and continual improvement processes to enable managers, practitioners, analysts, and researchers to achieve more effective approaches to improving quality. Each article highlights the need for data-driven decision-making to achieve breakthrough quality improvement.

Dr. Sandy Furterer is developing and deploying the Enterprise Performance Excellence program for Holy Cross Hospital in south Florida. She discusses designing an Enterprise Lean Six Sigma program to help enhance the success of the program. She describes the key components of an Enterprise Six Sigma program that are critical to creating an organizational culture that makes fact-based decisions and continually improves processes across the enterprise.

Dr. Cassandra Elrod, assistant professor at the Missouri University of Science and

Technology, discusses an operationalized approach to implementing and measuring quality management based on Deming's 14 Points. This approach provides a guided method of where to start to employ quality management principles and a method by which to measure the outcomes of these efforts, make improvements in their implementation, and maximize a positive outcome.

Mr. Glenn Mazur, President of Japan Business Consultants, Ltd., describes the Blitz QFD® concept that enables developers to focus their efforts on the most important customer needs to ensure that all downstream functions are aligned to deliver value in the final product. This concept provides a streamlined approach that replaces the large, comprehensive data sets while still providing development, build, and delivery. The approach satisfies customer requirements with competitive products and a reduced development cost.

The team of Dr. Connie Borror, Tom Beechy, Dr. Dan Shunk, Mike Gish, and Dr. Douglas Montgomery discuss a case study involving TASER, which experienced tremendous market growth leading to a larger international customer base and new environmental operating conditions. As a result, several quality issues and challenges arose across the enterprise and supply chain. The article describes the culture change that was necessary in order to achieve a new level of thinking and to make quality a priority.

I am very honored to serve as the guest editor for the Fall 2011 *Quality Management Forum*, and I hope you enjoy reading the articles. Please feel free to send me your feedback at eachx8@mst.edu.

Blitz QFD®—the Modern, Matrix-Free Way to Profit Improvement

By Glenn Mazur

Background

Profit equals revenue minus cost. There are two ways to improve profits—increase revenue and decrease costs. Traditional quality approaches, such as Lean Sigma, focus on the latter—variability reduction, reliability improvement to decrease warranty costs, and other means by which labor and supplier costs are decreased through improved productivity and supply chain savings. The best you can get, though, is zero costs. The former, increased revenue is earned through the sale of new products. This can result from better marketing efforts, channel efficiencies, and new product quality. The best you can get in revenue increase is limited only by the size of the market, which globally, is growing.

New product quality has long been defined in terms of “fitness” for use, fitness for market, fitness for price, fitness for environment, etc. A design quality perspective focuses on “fitness for use” by customers. This is often called customer-driven product development.

The best practice interface of customers and new product development quality began in the 1960s in Japan when Drs. Mizuno and Akao developed Quality Function Deployment (QFD). The concept was that customer satisfaction (quality) with new products had to begin upstream before design quality was set, specifications determined, and manufacturing processes engaged. In most organizations pre-design was the arena of new business development and marketing, design specifications were the arena of engineering, and manufacturing processes were the arena of manufacturing and production engineering coupled with quality control. Thus, *quality* concerns could not just wait their turn, but needed to be *deployed* across all the appropriate business *functions*.

In the resource-bountiful, lifetime employment world of 1960s Japan, QFD grew into a series of large, complex matrices, such as the House of Quality, to drill down customer needs into sufficient detail for design, development, build, delivery, and service quality. Twenty-first century Lean organizations can rarely support this level of effort, and so project teams have been seeking a more efficient approach. Product developers frequently express that although QFD is a good thing to do, there is no longer enough time or people to complete the process. This has resulted in many teams quitting in the middle or abandoning QFD altogether.

Aware of this problem, Akao asked the author and his colleagues at the QFD Institute (a non-profit research organization in Michigan) to make QFD more efficient for modern Lean organizations. Based on Blitz QFD® for software developed by one of the founders of the QFD Institute, a more generalized approach emerged in 2000 that became the foundation of the QFD Green Belt® and QFD Black Belt® programs, which focus specifically on a progression of QFD skills. The goal was to retain the benefits of QFD but to streamline the process.

How Blitz QFD® Works

The purpose of QFD is to focus designers, developers, builders, and deliverers (whether your business is product, service, process, or software) to assure that the quality of their efforts will create more value for customers than competitors' offerings. For most projects, it will be a small number of things that will ensure this competitiveness—everything else must be more or less equal. Further, because most modern project teams are so time and resource constrained, they cannot do much more than a few things better than the competition, anyway. From this perspective, then, it is most efficient to focus on the few things that make a competitive difference. Figure 1 illustrates the Blitz QFD® concept that developers' best efforts should focus on a small number of the most important customer needs and ensure that all downstream functions align their best efforts accordingly in order to deliver value in the final product. Thus, the idea is to do your best where customers will get the biggest bang for their buck. Blitz® QFD's streamlined focus replaces (or supplements) traditional QFD's serial matrices of large, comprehensive data sets of customer needs and product characteristics for detailed development, build, and delivery.

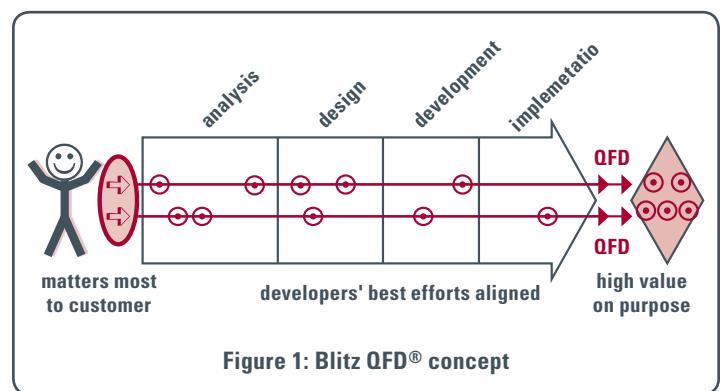


Figure 1: Blitz QFD® concept

(BLITZ QFD®—THE MODERN, MATRIX-FREE WAY TO PROFIT IMPROVEMENT,
continued on page 12)

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continued from page 11)

The risk, though, is in getting these top few customer needs right. For this, a new voice of customer (VOC) analysis tool set was created to document what is known and discover what is unknown. The generic tool set includes worksheets for:

1. Setting project scope and goals.
2. Defining and prioritizing key customer segments.
3. Acquiring VOC through multiple channels, including a unique-to-QFD approach of going to the customer's *gemba* (the place of work or life where the product is to be used).
4. Translating VOC into product independent customer needs.
5. Having customers organize their needs to reveal hidden, unspoken ones.
6. Having customers prioritize their needs in ratio scale. Ratio scale prioritization helps accurately sort the critical few customer needs from the trivial many.
7. These needs are then deployed into the product development phases appropriate for the organization. At each phase, critical-to-quality characteristics and parameters as well as design solutions and implementation means must be defined, validated, and deployed to the next phase. Since these are confined to the critical few customer needs, the project team is highly focused to expend their energy here. This results in a product that assures better customer satisfaction than competitive alternatives.

For the many trivial customer needs, most projects can offer their standard engineering solutions since improvements in these areas will earn less customer satisfaction than for critical needs. This, of course, assumes that a standard engineering solution exists. For

most projects that are fixes, refreshes, or next generations, this is usually not a problem. For truly new products, it may be more useful to begin with the Blitz QFD® and then follow with the more complex matrices when deeper analysis is necessary.

The Role of Quality Managers in Blitz QFD®

Research by members of the International Council for QFD (www.icqfd.org) has shown that management support is critical for success (Miguel, 2003). Common problems reported by traditional QFD teams include:

- Organizational structure difficulties: 30% of teams reported this problem
- Lack of management support: 40%
- Team member commitment: 50%
- Lack of human/financial resources: 35%
- Lack of QFD experience: 50%
- No time to get customer needs: 30%
- Difficulty rating customer needs: 35%

To address these, Blitz QFD® begins with custom tailoring the QFD process to improve adoption and compliance by the marketing and engineering groups. Tailoring diagnoses the new product development process, the industry and technology, the customers and competitors, and related factors. Based on this, a tailored QFD process and tools are recommended for both minimum effort and advanced projects. Management deliverables and responsibilities are also noted, particularly for gate reviews.

Conclusion

Blitz QFD® is a powerful way to achieve profit through increased revenue from new products that satisfy customers better than competitive products and reduced development costs from focusing resources on a small number of critical customer needs. This is best accomplished when quality managers employ a QFD process that is appropriate for their organization and request evidence from that process at each gate review. Case studies of custom tailored QFD applications in a variety of industries can be downloaded at www.mazur.net. Blitz QFD® information can be found at the QFD Institute website at www.qfdi.org

References

Miguel, PAC. (2003). The State of the art of the Brazilian QFD applications at the top 500 companies. *Special Issue of the International Journal of Quality and Reliability Management: The leading Edge in QFD*.

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