

## WHEN THE PURSUIT OF QUALITY DESTROYS VALUE

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Quality has been hailed by software engineers as the solution to many of the most urgent challenges facing our industry in the 1990s, ranging from technical concerns – such as safety and reliability – to strategic concerns – such as market share, customer satisfaction, and economic profit. Today, our industry is adopting the ISO 9000 quality framework with the same enthusiasm we showed for Total Quality Management in the 1980s. Yet consider this: Paul Taylor and international management consulting firm A.T. Kearney recently estimated that less than 20 percent of the companies that implemented TQM programs reported any financial improvement (“Such an Elusive Quality,” *Financial Times*, Feb. 14, 1992).

How can this be?

Surely, the relentless pursuit of quality can dramatically improve the technical characteristics of a software product or service. In some applications – medical instruments air-navigation systems, and many defense-related systems – the need to provide a certain level of quality is beyond debate. But is quality really a framework for strategic decision making in the broader, *commercial* marketplace?

Many contributors to this column have argued that, as our industry matures and becomes ever more central to a company’s business, software engineers must become familiar with many viewpoints. For example, Suzanne Robertson took a systems perspective (“Visibility: The Key to Quality Improvement,” July 1995, pp. 95-97). Here I will shift the perspective to that of the corporate strategic analyst. When you take this view, I think you will be surprised to discover how tenuous the linkage between quality, competitive position, and profit can be.

### *STRATEGIC PROBLEMS*

Marakon Associates, a consulting firm specializing in value-based management, notes that “as an operating philosophy TQM may be without peer. But as a framework for strategic decision-making, it fails to address many of the fundamental issues that most affect a company’s long-term competitive and financial performance.” *The Value Imperative* provides an excellent distillation of the Marakon directors’ Commentary series (James McTaggart *et al.*, The Free Press, 1994). Let’s consider how some of their arguments apply to quality as it is practiced in the software industry today.

### *PROFITABLE MEASURES?*

We must identify the right quality measures to improve the quality that will produce a better financial performance. Quality metrics per se, such as performance measures or defect rates, make no explicit strategic or economic statement. For example, a bank recently encouraged its loan officers to minimize the percentage of bad loans, which might be thought of as “defects.” Instead of minimizing the loan “defect rate,” the bank discovered that loan officers achieved the goal of making fewer bad loans by lowering the overall number of loans they made. This practice actually brought in *less* money.

In the software market, developers of today's syntax-directed HTML editors are finding that many experienced users who need the flexibility to experiment with new or subtle features consider a strict, constant adherence to HTML syntax a defect rather than a virtue.

### *QUALITY PRICING*

TQM provides no framework for assessing whether customers will pay higher prices for more quality. In our industry, we must always take into account the rapid evolution of software's underlying technology and the relatively short life cycle of our products. When Borland's Turbo Pascal compiler appeared on the market several years ago, its blindingly fast compilation speeds on the 8-bit machines of the day differentiated it successfully from its slower competitors. Today, customers know that a significantly faster CPU chip is always just a few months away, and will thus spend little time evaluating the relative speeds of available compilers.

From a strategic perspective, we should evaluate all investments in quality with respect to their contribution to building a competitive advantage. There are two primary drivers of competitive advantage:

- lower production costs and
- product differentiation (the ability to set a premium price for a product because it offers a meaningful advantage over its competitors).

We have long appreciated the value of quality in decreasing software-production costs, especially through reduced maintenance. But quality for quality's sake yields few benefits toward differentiating a product. Indeed, quality makes *no* statement about product pricing strategies. Knowing how much to charge for improved quality can be as important for financial performance as knowing how to assure improved quality in the first place. In today's volatile software market, where upgrades are provided at a mere fraction of the original's price and products are often distributed free on the Internet in the hopes of future financial returns, pricing strategies have taken on a greater and more complex role than in many other industries.

### *FANATICAL QUALITY*

I once asked a colleague what he could tell me about another colleague I had just met. He gave me a wry smile and said, "He's a quality man." He was referring, of course, not to quality itself but to a certain culture that often leads to fanaticism. George Newman put it this way ("The Case Against Quality," *Across the Board*, June 1991, p. 58):

*... the fadmongers [of quality] have converted a pragmatic, economic issue into an ideological, fanatical crusade. The language is revealing. The terms of quality as an economic issue are analysis, cost, benefit, and tradeoff. The terms of quality as a crusade are total, 100 percent quality, and zero defects; they are the absolutes of zealots. This language may have its place in pep talks ... but once it is taken seriously and literally, we are in trouble.*

As we put into place comprehensive programs like ISO 9000 to fulfill a much-needed purpose, we must resist the tendency to build bloated, overzealous quality organizations that will grind down our companies' financial performance.

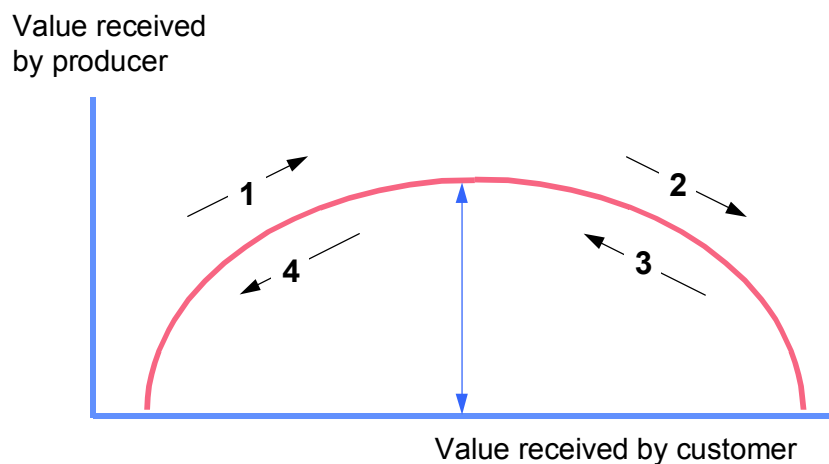
### *PREREQUISITE: QUALITY*

In markets such as aerospace and defense, it is increasingly common to require that vendors supply some “quality guarantee” before even being allowed to bid on a project: ISO 9000 certification or an SEI assessment, for example. In these cases, quality certification effectively becomes a “union card” for market participation.

This trend will likely spread to other markets. Given the level playing field created by universal mandatory certification, only the finest quality practitioners in such markets are likely to see any economic rewards that can be directly linked to quality. Thus, quality *by itself* is no longer a strategy that will ensure a competitive advantage. We must learn to use quality intelligently, as one component of our overall business strategy.

### *CUSTOMER SATISFACTION*

Many who implement a quality program these days focus on customer satisfaction. Surely, they reason, happier customers must lead directly to higher profits. This is not necessarily the case. Figure 1 demonstrates the potential consequences of pursuing such a strategy. This graph, drawn from Marakon Associates’ research, shows four possible scenarios, each illustrated with a real-world example, in which the value offered to the customer may be more aligned or less aligned with the economic benefits received by the company.



*Figure 1. Four outcomes possible when pursuing a customer-satisfaction strategy*

**Scenario 1.** *Satisfied customers mirror the company’s financial gains.* In 1990, Microsoft introduced Windows 3.0, which was enormously successful with its satisfied users and enormously profitable for the company.

**Scenario 2.** *The value offered to customers is greater than the return on investment made by the company.* General Magic is incorporating its justly praised Magic Cap and Telescript software into a new generation of personal digital assistants, offering at reasonable prices to its customers an innovative and reliable software technology. Yet the enormous overhead of creating this technology caused General Magic to lose tens of millions of dollars, and some now doubt that the company will ever achieve its long-term goals. (C. Matsumoto, “General Magic’s Motorola, AT&T Accounts Go Poof,” *San Francisco Business Times*, Sept. 8, 1995).

**Scenario 3.** *The product offers more value than customers will pay for.* The Environmental Systems Research Institute’s ArcInfo product has long been a leader in the geographic information system market. It comes with a high price tag and relies on powerful workstation technology to provide comprehensive, high-quality GIS

services that range from data entry to visualization. Recently, after noting the entry to less expensive, PC-based systems into the market, ESRI reacted by offering a much lower priced, Windows-based version of ArcInfo, called ArcView, which offers customers GIS data visualization but not data-entry capabilities. Despite the lower reliability and capacity of the Windows environment, ArcView has been very successful and satisfied a large segment of the GIS user community whose requirements are less stringent and whose pockets are less deep.

**Scenario 4.** *Declining customer satisfaction matches a decline in the company's fortunes.* Digital Equipment Corporation is only now recovering financially from the flight of dissatisfied customers away from its proprietary operating systems and network software. Through its embrace of open-systems technologies, Digital is beginning to recapture some of its lost customer base.

These scenarios show that conflicts can arise between your economic interests and those of your customers in many ways. Focusing narrowly on quality and customer satisfaction will not address or resolve these conflicts.

Finally, in today's rapidly changing environment, even satisfied customers may quickly find more appealing alternatives. IBM was widely congratulated on the acquisition of Lotus Development Corporation and its successful, highly popular Lotus Notes product. But the wisdom of that acquisition is already being questioned as users abandon Lotus Notes – which must be installed on each networked PC – in favor of using the Internet to download an application only when needed.

### *FUTURE STRATEGY*

What can you do to avoid the trap of pursuing quality and customer satisfaction at any cost? First, simply be aware that quality for quality's sake won't do. You need a strategic decision-making framework that directly addresses topics such as market participation, resource allocation, and product-pricing issues. Having taken that step, you can acquaint yourself with several approaches, such as the concept of Return on Quality used in corporations such as AT&T ("Quality: How to Make It Pay," *Business Week*, August 8, 1994). ROQ evaluates prospective quality improvements against their ability to also improve financial performance.

Even better, familiarize yourself with management approaches that integrate quality within a strategic framework such as value-based management. VBM comprises a set of principles and processes that link quality-related factors explicitly to economic value, illuminating the inevitable tradeoffs:

- improvements in product quality versus higher economic costs,
- return on investment versus market share, and
- short-term results versus market competition.

Quality applied properly can enhance the value of your products, improving both your competitive advantage and financial performance. Used improperly, quality can and does destroy value. You can avoid this by using quality not as an end in itself but as a solid contributor to the overall decision-making framework of your business.