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## Does Baldrige Make a Business Case for Quality?

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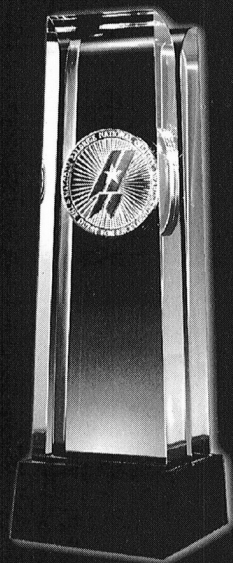
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## MALCOLM BALDRIGE NATIONAL QUALITY AWARD

# Does Baldrige A Business

by **Mark L. Dean and Cynthia L. Tomovic**

**T**he Malcolm Baldrige National Quality Award (MBNQA) has been an immensely successful model for promoting the collection and sharing of best practices across the United States. Its focus on quality management and business results has been a beacon for companies driven

### **In 50 Words Or Less**

- **The success of Baldrige Award winners has been promoted as evidence quality management leads to excellent business results.**
- **Since the Baldrige criteria include results, this conclusion may not be valid.**
- **Statistical analysis of Baldrige related data could help determine what actually leads to excellent results.**

to excellence. The success of Baldrige winners has been promoted as evidence quality management leads to excellent business results. Does it?

### **Underlying Assumption**

The Baldrige model comprises seven categories of criteria. The first six categories—leadership; strategic planning; customer and market focus; measurement, analysis and knowledge management; human resource focus; and process management—are described as approach-deployment criteria. The final category is business results.

To win the award, organizations must achieve success in both approach-deployment and results. Applicants are scored based on point values ascribed to each of the seven categories. Figure 1 summarizes the respective point values.

An underlying assumption of the Baldrige model is successful implementation of the approach-deployment criteria will lead to excellent business results. Indeed, the Baldrige criteria booklet says as much:

The criteria are designed to help organizations use an integrated approach to organizational performance management that results in

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delivery of ever-improving value to customers, contributing to marketplace success and improvement of overall organizational effectiveness and capabilities.<sup>1</sup>

Unfortunately, Baldrige data have not been analyzed in a way that supports this assumption. We see two problems:

1. Successful implementation of the Baldrige model is confounded with excellent business results, because excellent business results are themselves part of the model. Since business results are one of the seven criteria used to evaluate an organization's performance against the model, the contribution of the approach-deployment elements to excellent results cannot be determined.
2. We can't ascribe any validity to the weights assigned.

**Success on the Baldrige criteria is confounded with results.** We assert it has not been demonstrated that successful implementation of the approach-deployment criteria—what we call quality management—results in delivery of the outcomes the criteria booklet promises. What has been demonstrated is companies that score well on the Baldrige

criteria continue to exhibit excellent results. We don't know whether these results are caused by the suggested approach-deployment elements.

The Baldrige model is not the same as quality management (meaning quality management as approach-deployment only). Rather, the Baldrige model is the same as quality management plus results. Thus, scoring well on the Baldrige requires success in approach and deployment and success in results. Whether quality management

**FIGURE 1** 2004 Baldrige Criteria Categories and Point Values

| Approach-deployment  | Results                       |
|--|-------------------------------|
| Leadership (120 points)                                    | Business results (450 points) |
| Strategic planning (85 points)                             |                               |
| Customer and market focus (85 points)                      |                               |
| Measurement, analysis and knowledge management (90 points) |                               |
| Human resource focus (85 points)                           |                               |
| Process management (85 points)                             |                               |

(approach-deployment) is responsible for the excellent results has not been determined conclusively.

**The weighting of the elements is not empirically based.** For the approach-deployment elements, the point totals as shown in Figure 1 (p. 41) implicitly suggest which elements are most important to achieving excellent results. No doubt, this information would be helpful to companies pursuing excellence, for it suggests where they should expend their resources to get the biggest bang for their buck.

Unfortunately, the weightings are arbitrary at worst and at best merely reflect the combined judgments of those who determine them. In other words, they have not been empirically determined or validated.

### A Simple Example

A fictitious example may prove illustrative. Let's say we want to institute the Blarney Award for Home Run Effectiveness to promote our model (approach-deployment) for hitting home runs (results).

We pull together some expert batting coaches who determine what they believe are the necessary attributes for a world-class home run hitter, as shown in the approach-deployment column in Figure 2. They also assign weights to these criteria based on their collective, subjective judgment.

We announce the national award competition and receive applications from a number of major league hitters in which they discuss their strength, speed and eyesight, describe their superstitious behaviors (obviously, the more the better) and talk about their community outreach in terms of number of autographs signed. Finally, they tell us the results achieved in terms of home runs hit over the last few years.

Next we identify the winners, observe their performance for the next couple years and find they outperform the average batter on home run hitting. Then we proclaim, "Batters who successfully implement the Blarney model achieve excellent home run hitting results."

The problem is we have made our conclusions suspect by including results (home runs hit) in determining Blarney winners. We can't conclude our approach led to excellent home run hitting. We

don't even know if there is a correlation between the model and home runs. All we can conclude is athletes who scored high on strength, superstitious behavior and the other approach-deployment items and scored high on home run hitting in the past few years (results) continued to outperform the average batter on home run hitting.

To further illustrate, suppose Babe Ruth, Sandy Koufax, Mickey Mantle and Roger Maris all apply for our award. Suppose Ruth, Mantle and Maris are all prolific home run hitters, so all do equally well on the results section of the application. The Babe doesn't do well on superstitious behavior, and Maris doesn't sign many autographs. On the other hand, Koufax scores very high on all the approach-deployment elements but not so high on home runs.

So, since Mantle does everything well, he wins our award. And indeed, over the next few years, he continues to outperform most hitters on home runs. We hold him up as an example for all to show successful implementation of the Blarney model, specifically in approach-deployment, leads to successful home run hitting.

Of course, this is an erroneous conclusion. Ruth and Maris did equally well on home run hitting as did our winner Mantle, and they didn't implement the Blarney model as well as he did.

What this tells us is there may be other factors, not included in the model, that do explain home run hitting. For example, perhaps we have neglected reflex speed. Moreover, Koufax, who implemented our model excellently, nonetheless did not achieve great home run success. This suggests perhaps some of the items we have included—for example, super-

**FIGURE 2** Blarney Model For Home Run Effectiveness

| Approach-deployment                     | Results                    |
|---|----------------------------|
| Physical strength (100 points)          | Home runs hit (500 points) |
| Speed in the 100-yard dash (100 points) |                            |
| Superstitious behavior (150 points)     |                            |
| Eyesight (100 points)                   |                            |
| Number of autographs signed (50 points) |                            |

stitious behavior or number of autographs signed—have no impact on home run hitting.

The bottom line is this: Without analyzing the data, we cannot draw conclusions on how effective our model is in achieving its objective of home run excellence, nor can we assign weights to the elements to suggest their relative importance.

Similarly, Baldrige applicants who score well on the results section may continue to do well on results, independent of their approach and deployment. There may be something besides the elements of the Baldrige model that explains their success, and some of the elements included may have no impact on success.

Without appropriate statistical analyses, we cannot draw any empirically grounded conclusions. We cannot say with certainty the approach-deployment elements (quality management) espoused by the Baldrige model lead to excellent results, nor can we suggest an empirically validated weighting of these elements.

### **Baldrige Index as an Example**

The Baldrige Index is a fictitious stock fund of publicly traded U.S. companies that have won the MBNQA.

The National Institute of Standards and Technology (NIST), which includes the Baldrige National Quality Program (BNQP), has conducted an investment study annually since 1995 to track the stock price performance of Baldrige award winners compared to the Standard & Poor's (S&P) 500.

Since the first year the study was conducted, the Baldrige Index has consistently outperformed the S&P, sometimes with impressive margins. For example, in its eighth study, released in March 2002, NIST reported, "The two whole company winners outperformed the S&P 500 by almost 4.5 to 1, a 512% return on investment."<sup>2</sup> Sounds great, doesn't it?

NIST tells us these results mean, "Investing in quality management can result in an impressive payoff."<sup>3</sup>

Curt Reimann, director of BNQP in 1995, said of the results of the Baldrige Index: "This review adds to the mounting evidence that, done right, quality management can lead to outstanding returns in many business areas, including finan-

cial performance, satisfied customers and improved market share."<sup>4</sup>

Harry Hertz, current BNQP director, said in 1997, "While stock market performance is only one indicator of business success, this study demonstrates a quality approach to running a business can be financially profitable and can lead to increased productivity, satisfied employees and customers and a competitive advantage."<sup>5</sup>

**What the Baldrige index really tells us is companies that are doing well on approach-deployment and results do better in the future on a more specific measure of results: their stock prices.**

Reimann and Hertz both separated the Baldrige model into approach-deployment and results, then suggested companies that do well on the approach-deployment elements (Reimann called them "quality management"; Hertz, "quality approach") have better than average stock returns. They asserted excellent approach-deployment leads to excellent results.

This is misleading, because we know companies that score well on the Baldrige criteria, by definition, are already doing well on approach-deployment and results. What the Baldrige Index really tells us is companies doing well on approach-deployment and results do better in the future on a more specific measure of results: stock prices. Again, cause and effect are confused under the assertion that approach-deployment led to the outstanding results.

### Is There Proof Elsewhere?

Many of us quality professionals like to believe that assertion, and some studies seem to suggest it's true. For example, a 1991 study of 20 U.S. companies conducted by the U.S. General Accounting Office found, "In nearly all cases, companies that used total quality management practices achieved better employee relations, higher productivity, greater customer satisfaction, increased market share and improved profitability."<sup>6</sup>

The wealth of data could be mined to yield significant insights into whether the approach-deployment advocated by the Baldrige model does yield excellent results or at least correlates with excellent results.

Also, as reported by NIST in a 2001 fact sheet: "Other studies have found organizations receiving quality awards show long-lasting improvements. For example, professors Vinod Singhal of the Georgia Institute of Technology and Kevin Hendricks of the University of Western Ontario studied 600 publicly traded firms that have won quality awards, including the Baldrige. The five-year study showed award recipients experienced a 44% higher stock price return, 48% higher growth in operating income and 37% higher growth in sales than the control group."<sup>7</sup>

Sounds good, but analyses that equate success of a model that includes results with successful implementation of a quality management process

cannot correctly lead us to conclude quality management brought about those results.

As with the other examples, the conclusions of these studies are suspect because results are included in the determination of a successful company. These analyses do not tell us which factors are important to success, how important they are or how to improve them.

### What Can Be Done?

The Baldrige criteria are presented as a model for world-class performance—that is, "Do this and you will excel." But to prove the elements identified in approach-deployment lead to world-class results or to empirically validate the weights assigned to these elements, additional study is needed.

NIST retains a history of Baldrige applications and the results of their evaluations. This is a wealth of data that could be mined to yield significant insights into whether the approach-deployment advocated by the Baldrige model does yield excellent results or at least correlates with excellent results.

Moreover, statistical analyses could be conducted to help gain a better understanding of the effects of quality management—effective approach and deployment of the quality management philosophy. For example, regression analyses could be conducted with approach-deployment criteria as the predictor variables and results as the dependent variables. This could tell us the relative importance of these criteria and commensurately what weights to assign them on Baldrige applications.

More sophisticated statistical techniques, such as structural equation modeling (for example, like that performed by LISREL software), would also be effective in helping mine the data and determine the relationships among the variables. Through such modeling, we could begin to trace causal and associational paths.

NIST does not currently conduct any analyses on the data or apparently allow others access to the data. "At the current time we have neither the authority nor the resources to mine some of the rich data we believe lie in the award applications and scorebooks," said Barry Diamondstone, deputy director of BNQP.

"Unfortunately," he continued, "the data are not available in a format that would be easily retrieved.

It would require considerable effort to obtain the data and maintain the confidentiality that is critical to our program. We are hopeful that someday in the near future, we will be able to carry out the research that would make this information available to all sectors of the U.S. economy.”<sup>8</sup>

## Sharing the Wealth

The Baldrige model has successfully promoted quality improvement. Moreover, organizations that win the award demonstrate consistently high standards of quality, productivity and competitive position. An analysis of business results is included in evaluating winners, which is necessary if for no other reason than to ensure we recognize only organizations that have utilized quality management and achieved excellent results. We want them to be our models.

However, including results in analyses to determine the effectiveness of the approach-deployment elements is circular, since winning companies must do well on both approach-deployment and results. What is needed is empirical evaluation of the data maintained by NIST. Analysis of Baldrige data could help:

- Begin to determine the effectiveness of the model in achieving quality and productivity gains.
- Determine the relative degree of importance of each of the approach-deployment elements. Such analysis would result in weightings that reflect the actual contribution of the element to superior quality and productivity.

Once we realize we don't yet have the answer to what leads to excellent business results, we can go about the business of analyzing the wealth of data we have, determine what elements contribute to business excellence and to what degree, and share this information.

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