

Is It a Good Investment Strategy to Invest in Malcolm Baldrige Award Winners?: An Update

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Abstract

In a world of uncertain returns, investors consider risk. Lower risk is often ascribed to investments with higher quality. Firm quality, however, is difficult to quantify. One of the most exclusive management quality distinctions is the Malcolm Baldrige National Quality Award (MBNQA). Since 1988, only thirty-one MBNQAs have been awarded to publicly-held corporations, and frequently to small fractions of an entire firm. This report explains the MBNQA and reports on the share price performance of MBNQA winners.

I. Introduction and Literature Review

The Malcolm Baldrige National Quality Award (MBNQA) has now been awarded for approximately a quarter of a century. Created by the Malcolm Baldrige National Quality Improvement Act of 1987 (1987), the award was viewed as a means to stimulate quality and improvement and recognize achievement. In the process, criteria were to be established that would act as guidelines in the evaluation of improvement and make available information on award winning companies for others that wish to learn about quality. During this time, this prestigious award recognizes the achievements of a select few companies and organizations that effectively used Total Quality Management (TQM) principles and methodology to manage their organizations. In his classic book *Out Of The Crisis*, W. Edwards Deming states that "once management in Japan adopted the chain reaction, everyone there from 1950 onward had one common aim, namely, quality." (Deming, 1982, p.3) The chain reaction that he was referring to goes as follows:

If you improve quality...

- costs decrease because of less rework, fewer mistakes, fewer delays, snags; better use of machine-time and materials...
- which leads to improved productivity...
- which allows you to capture a greater market share as customers recognize your improved quality and possibly lower prices...
- which allows you to stay in business...
- which allows you to provide stable jobs for your employees and more jobs for additional employees over time.

A decade after the Baldrige Act became law, Krueger and Wrolstad (1997) investigated whether companies who adopted the "chain reaction paradigm" described above might also have superior financial performance over time. In their portfolio of the 14 publically traded companies awarded the MBNQA from the beginning in 1988 until 1995, they assumed an investment of \$1,000 in each company on the day of the public award announcement. For comparison purposes, they constructed a similar portfolio that assumed an equal investment in each individual firm's industry index. They found that by 1995 the award-winner portfolio outperformed their industry index based portfolio for a terminal value of \$31,000 vs. \$30,000 and significantly outperformed the S&P 500 index based portfolio for a terminal value of \$31,000 vs. \$6,000.

Other findings by Krueger and Wrolstad were that MBNQA winners tended to have more risk, whether measured as total or systematic risk. When they considered portfolio performance using the Sharpe Measure, the Baldrige portfolio under-performed the S&P 500 market portfolio with a risk-adjusted monthly return of 0.153 versus 0.169. As they examined portfolio performance using the Treynor Measure, they found that the Baldrige portfolio outperformed the S&P 500 with risk-adjusted monthly returns of 0.71 versus 0.56 for the S&P 500 Index.

The MBNQA allows single divisions within larger companies to compete and possibly win the award. An additional finding of the Krueger and Wrolstad study was that whole-firm winners tended to outperform firms that had only divisions within them that had won the award. The average monthly return of whole-firm winners was 2.31% versus 1.21% for divisional winner firms

The federal government organization in charge of the MBNQA is the National Institute of Standards and Technology (NIST) which is a non-regulatory agency of the United States Department of Commerce. In a series of reports starting in 1995 and continuing through 2002, the NIST (1995, 1996, 1997, 1998, and 1999) published the performance of a hypothetical portfolio containing the common stocks of all publically traded Baldrige Award winner companies to that point in time. The award winner portfolio was set up by investing \$1,000 in each winning company and a fraction of \$1,000 in each company with a divisional winner on the basis of employees as a percent of the whole company. In each of the published reports, they were able to report that the portfolio containing the award winner portfolio outperformed a matched portfolio of non-award winners. The winning streak came to an end in their 2003 report (NIST, 2003), which announced that after nine winning years, the S&P 500 had finally outperformed the Baldrige portfolio. In the 2003 report Harry Hertz, director of the NIST Baldrige National Quality Program said, "This past year has been a particularly tough one for technology stocks, which are a very significant component of the Baldrige portfolio. But, I am confident that in the coming years, the Baldrige Award winners will continue to excel in their performance, including in their bottom line."

In order to further explain the seeming lackluster performance of the award winners, Denis Leonard (2000) suggests that there are a number of factors that may be playing a part in this result. As firms look at the investment of the time, effort, and money involved in applying for the MBNQA, they seriously consider less costly ways to achieve the anticipated benefits of quality improvement. G. Sherman (1992) reported that many businesses waste millions of dollars a year on quality improvement strategies that do not improve their performance and may even hamper it. Examples he cites of the expense involved are the \$800,000 that 1989 winner Xerox spent and the 14,000 labor hours that the 1989 finalist Corning invested in preparing for examiner site visits.

One alternative to the MBNQA is to apply for one of the many state sponsored quality awards. This allows the company to learn about quality and develop quality processes without the greater expense involved in applying for the national award. Although the criterion for the state awards are typically very similar to the MBNQA, the likelihood of winning a state award is significantly greater than winning the MBNQA because state awards typically do not limit the number of winners to only two in each category as was done in earlier years for the national award. This artificial limit on the number of winners seems to have been relaxed in 2001 when three educational institutions were given the Baldrige Award in the same year. Another benefit of the

state awards is that firms that fail to win the “gold” or top level of award achievement can often earn awards at the lower levels of achievement that are often called the “silver” or “bronze” levels. In a reaction to the criticisms from the numerous companies that have spent a lot of time and money applying for the MBNQA and not receiving it, as seen in Table I, new requirements for applicants more or less force companies to have won their top state award before applications can compete for the national award competition. This new policy at least partially explains the drastic reduction in the number of applications for the MBNQA since the early 1990’s.

Yet another alternative to the MBNQA for frugal larger companies is to create an internal quality improvement program. Firms can use the MBNQA requirements and through internal training, self-assessment surveys, internal examiners, and the like achieve many of the quality improvement benefits at a more limited cost. The downside of this approach is that it lacks the added motivation and timelines that external scrutiny provides. It also lacks the external validation that winning the awards conveys to the firm and potential investors.

Another explanation for the reduced number of applicants is the development of alternative avenues to quality improvement. One of the possible approaches is a business management strategy referred to as Six Sigma. Six Sigma seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes. A second possible avenue to quality improvement is known as Lean Manufacturing. Lean Manufacturing is a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful, and thus a target for elimination. A third possible approach to quality improvement is the ISO 9000 family of standards. The ISO 9000 standards are related to quality management systems that firms install, document, and are ultimately third-party certified. All of these three approaches are really just subsets of the Total Quality Management ideal of a whole-firm, integrated system of quality processes that are embodied in the seven MBNQA criteria areas. Consequently, there are a number of ways to enjoy some of the benefits of quality improvement without the high stakes effort to win the MBNQA.

Consistent with early research in this area, Easton & Jarrell (1996) found that corporate performance as measured by profit margin, return on assets, asset use efficiency, and excess stock returns are improved in their sample of firms who adopted TQM. They also found that firms with more advanced TQM systems, the financial performance was notably and consistently stronger. The winning of the MBNQA would obviously identify the existence of “more advanced TQM systems.”

Table I. MBNQA Winners
Manufacturing, Service, and Small Business Divisions

Award Year	Applications	Site Visits	Awards
1988	66	13	3
1989	40	10	2
1990	97	12	4
1991	106	19	3
1992	90	17	5
1993	76	13	2
1994	70	14	3
1995	47	13	2
1996	29	9	4
1997	26	11	4
1998	36	9	3
1999	27	7	4
2000	30	7	4
2001	19	7	2
2002	22	7	2
2003	30	8	4
2004	21	7	2
2005	15	4	3
2006	15	4	2
2007	13	2	1
2008	15	3	1
2009	11	4	2
2010	12	7	5
2011	7	1	0

Jacob, Madu, and Tang (2004) looked at the performance of all MBNQA winners from 1988-2002. Their sample consisted of award-winning firms with publically traded stocks and divisions of publically-traded stocks for which they could get financial data. They found that award winners were superior financial performers and were valued higher by investors compared with similar sized firms and industry benchmarks. No evidence was found that winning the award caused changes in firm value in the award year or in subsequent years.

A much more recent look at MBNQA winners was the research done by Cazzell and Ulmer (2009). They looked at five winners of the award in the manufacturing category and found that each of the companies experienced remarkable financial growth in the few years leading up to the subsequent award and in the years after winning the award. Cazzell and Ulmer suggest that firms interested in the award begin the quality improvement process by performing a self-evaluation

utilizing the “Baldrige Criteria for Performance Excellence”. They caution interested firms that even winning the award does not guarantee an organization’s financial success. They point out the other factors such as the effectiveness of the company’s strategic plan and business model play a vital role in their firm’s long-term success.

The primary goal of this research is to update our previous study with additional award winning firms as we again try to determine whether or not investment in the MBNQA-winning firms results in significantly better investment performance.

II. Research Method

Sample

A complete listing of all thirty-one MBNQAs in the manufacturing, service, and small business categories earned by publically-held firms, the percentage of the firm that won the award, and the viability of these firms as of September 2012 is presented in Table 2. In six instances (Boeing, Caterpillar, Dana, Motorola, Solectron, Xerox), the same parent corporation won the award twice and one (AT&T) won the award three times. Hence, twenty-three publically-held firms can claim the distinction of having at least one division that has won the MBNQA. The entire firm has won the MBNQA seven times and the Solectron Corporation accounts for two of these seven awards. By contrast, there are thirteen times when a division of a firm representing less than five percent of the employees of its parent firm won the award.

Thirteen firms, or fifty-seven percent (i.e., 13 firms ÷ 23 firms), of the award-winning firms are still in business as independent corporations as of September 2012. In eight instances, the winning division or firm was acquired by another company. In three instances, the winning firm filed for bankruptcy. The combined value of twenty-four, which is one more than the twenty-three companies identified in the prior paragraph, arises from the acquisition of AT&T division winners by different corporations.

The firms which filed for bankruptcy are General Motors, Armstrong World, and Dana Corporation (twice a MBNQA winner). On average, divisions representing 4.6 percent of the corporation’s employees in these bankrupt firms won the MBNQA. The average amount of time since winning the award until these firms declared bankruptcy was eleven years. Given the low probability that these firms were heavily influenced by such a small portion of their firm winning the MBNQA over a decade earlier, these firms are eliminated from further consideration.

Table II. Public Corporations that Won MBNQA
Date, Divisional Winner, Parent, Percentage of Parent Company, and Current Viability

Date	Winner	Parent	Employee Base of Winner as Fraction of Parent	Condition of Parent in October 2012
12/1/1988	Motorola, Inc.	Motorola, Inc.	100.0%	Renamed Motorola Solutions in January 2011, with Google purchase of key units
12/1/1989	Westinghouse Nuclear Fuel	Westinghouse Electric	1.8%	Acquired by Viacom in 2000.
2/11/1989	Xerox Business Products	Xerox	79.0%	XRX trades on NYSE
11/1/1990	Federal Express IBM Rochester AS/400 General Motors (Cadillac)	Federal Express IBM General Motors	100.0% 10.7% 1.3%	FDX trades on NYSE IBM trades on the NYSE Filed for bankruptcy in 2009.
1/29/1991	Soletron Corporation	Soletron Corporation	100.0%	Acquired by Flextronics in 2007.
11/2/1992	AT&T Network Systems Texas Instruments (Defense) AT&T Universal Card Svs	Lucent Technologies Texas Instruments AT&T	3.7% 24.7% 0.6%	Acquired by Alcatel in 2006. Acquired by Raytheon in 1997. Acquired by Citigroup in 1997.
11/11/1993	Zytec Corporation	Artesyn Technologies	100.0%	Acquired by Emerson Electric in 2006.
1/3/1994	Eastman Chemical	Eastman Chemical	100.0%	EMN trades on NYSE.
11/1/1994	GTE Directories AT&T Consumer Communication	GTE Corporation AT&T	4.2% 15.9%	Became Verizon in 2000, trading as VZ on NYSE. Acquired by SBC in 2005.
11/1/1995	Corning Telecom Armstrong Building	Corning Armstrong World	3.6% 11.8%	GLW trades on the NYSE. Filed for bankruptcy in 2004.
11/1/1996	Dana Commercial Credit ADAC Laboratories	Dana Corporation ADAC Laboratories	1.1% 100.0%	Filed for bankruptcy in 2006. Acquired by Philips in 2000.
11/3/1997	Soletron Corporation Merrill Lynch Credit 3M Dental Products Xerox Business Services	Soletron Corporation Merrill Lynch 3M Xerox	100.0% 1.6% 1.0% 15.0%	Acquired by Flextronics in 2007. Acquired by BankAmerica in 2009. MMM trades on NYSE. XRX trades on NYSE.
12/1/1998	Boeing Airlift & Tanker Solar Turbines Incorporated	Boeing Corporation Caterpillar	3.7% 9.5%	BA trades on the NYSE. CAT trades on the NYSE.
3/30/1999	Ritz Carlton	Marriott International	9.6%	MAR trades on the NYSE.
12/1/1999	STMicroelectronics	STMicroelectronics	9.2%	STM trades on the NYSE.
12/1/2000	Spicer Driveshaft	Dana Corporation	3.9%	Filed for bankruptcy in 2006.
12/2/2002	CGISS	Motorola	13.8%	Renamed Motorola Solutions in January 2011.
12/1/2003	Aerospace Support Financial Services Corp.	Boeing Corporation Caterpillar	8.0% 1.0%	BA trades on the NYSE, CAT trades on the NYSE.
12/7/2009	Honeywell Federal Manufacturing	Honeywell	2.1%	HON trades on the NYSE.

The authors only have access to price data for firms that were publically traded in September 2012. As described below, stock prices from ten years are needed to provide complete information for our analysis. Only one of the acquisitions occurred during the five years after winning the award. Acquisitions would normally be at a premium which would positively impact the investment return. Hence, exclusion of this firm reduces the value of the MBNQA reported here. Exclusion of bankrupt and acquired firms probably creates a survivorship bias and consequently these findings have to be viewed with some caution.

Another survivorship bias faced by the authors is that several of contemporary direct competitors have gone out of business for various reasons. Ideally, we would like to create a portfolio of firms in the same industry which would serve as a performance benchmark. Direct competitors were found using finance.yahoo.com, which identifies four firms that have similar attributes. Longevity problems encountered by these alternative firms resulted in a limited number of firms in a possible benchmark portfolio. For example, Federal Express is unique. There are no publicly-traded comparable firms in existence since Federal Express won the MBNQA. In other instances, only one publicly-traded, comparable firm exists. The authors decided not to match award winners with a single alternative firm because the findings could easily be biased by unique events at the benchmark firms.

Performance will instead be compared to the commonly-used Standard & Poor's 500 Index. Unadjusted and beta-adjusted returns will be reported. Instead of benchmarking against matched firms or industry indexes, our study will benchmark performance of MBNQA winners against themselves. Specifically, we look at the time periods before and after winning the award to determine whether the applicant firms were able to use the MBNQA process and resultant TQM techniques to enhance shareholder wealth.

Measuring Performance

Share prices will be used as a way to assess the performance of MBNQA winners for several reasons. One, share prices can be identified on the day when awards are publically announced. Two, the investment performance during the five years prior to winning the award give us a perspective of the financial impact of the drive towards quality improvement which is not tied to one quarter's, or even one year's, financial statements. Three, the alternative of using financial statement values assumes that quality is tied to a limited number of identifiable "quality ratios" on which everyone can agree. A related challenge of the ratio approach is the dilemma that arises when some ratios inevitably show improvement and others do not. Four, the bottom line is that it is the shareholders and their perceptions of a company's quality that matters. Successful efforts to enhance quality should in a reasonably efficient market add value to a firm and be rewarded if winning the MBNQA is viewed as relevant by investors.

Divisional and Multiple MBNQA winners Resulting in Three Portfolios

Another obstacle to accurately measuring the impact of quality improvement efforts is that most frequently only a fraction of a firm applies for and wins the MBNQA. An argument can be made that only firms that consider quality important will allow a division to expend the time, effort, and money to compete for the MBNQA. Permission to apply for the award would only be given by a company that places a value on the benefits of TQM-based process improvements and believes it has a reasonable chance to win the MBNQA. They must also assume that shareholders will recognize their quality improvements and respond with a willingness to pay a higher price for shares of the firm.

In order to accommodate those that believe that there is an "osmosis effect" (i.e., interacting with the quality division encourages higher quality in the other divisions), we investigate the share price performance of the entire firm. The equally-weighted portfolio is constructed by equally

weighting MBNQA winners. There is no adjustment for the percentage of the firm that won the MBNQA. The implication is that even if only a small portion of the firm won the MBNQA, more attention is paid to quality management across the company. An alternative justification for including the entire firm is the potential for investors to bid up the value of stocks issued by firms that have at least a portion of the firm paying extra attention to quality improvement at a level sufficient to earn the MBNQA.

For those who do not consider quality performance in one division to influence the entire company, share price performance is weighted by the percentage of employees of the firm winning the award. The percentage-winning portfolio weights returns on the basis of the percentage of the firm winning the MBNQA. The percentage used here is the percentage of the entire company's employees in the MBNQA-winning division as reported and used by NIST and exhibited in Table II. The implicit assumption is that investors bid up prices in direct proportion to the percentage of the firm winning the award, believing that there may not be much synergistic carryover to other portions of the firm.

At the other extreme, some may argue that unless the entire firm wins the MBNQA, applying for the award is simply a spurious effort by a single manager. This argument against implying some corporate benefit to a fraction of the firm winning the award would suggest that if there was any effect, it would be small. The "entire firm" portfolio is limited to the three firms in existence in 2012 that won the MBNQA as an entire company. The three companies fulfilling this requirement are Motorola, Federal Express, and Eastman Chemical. The implicit assumption is that the greatest impact of the MBNQA occurs in those instances where every portion of the company has bought into the drive to enhance quality.

Responding to the above concerns, we will present three sets of data in Tables III and IV. The "All Firms" section, or Panel A, assumes an "osmosis" effect and will be reported first. The second section referred to as "Weighted firms," Panel B, is based upon a weighting of share price returns by the percentage of the firm receiving the MBNQA. Finally, the "Entire Firms" section, or Panel C, looks at the whole firm winners. In order to minimize the confounding of results arising from only a few firms winning the MBNQA multiple times, firms were only included once in these portfolios. The specific award, and hence the time period, chosen is the instance when the largest proportion of the firm, based on employment, won the award.

Sample Periods

Share price changes are examined over the five-year period prior to winning the MBNQA, the first year after winning the award, and the five-year period after winning the award. In the period shortly before winning the award, personnel in the corporations no doubt spend a great deal of time and effort to enhance and document the quality of their various processes. This would possibly have a negative effect on earnings especially in the last year or two years leading up to winning the award. To offset this effect, we consider the five year period prior to winning the award in order to get a better sense of how the firm was doing prior to winning the award. Analysis of the first year after the award provides an opportunity to evaluate the initial effects of having the quality processes in place plus all of the favorable publicity that winning the award entails.

Given the fundamental nature of the quality chain reaction, we would expect winners of the MBNQA to display quality performance over an extended period of time. Temporary setbacks in market, industry, or firm conditions may reduce share prices for any firm including MBNQA winners at any time. Quality management should ideally be able to overcome these challenges more effectively than a firm that does not have TQM processes in place. Therefore, the five-year performance window after winning the award seems to be more indicative of the long-term benefits flowing from winning the MBNQA than performance during just the first year after winning the award. The period following the first five years after winning the award may involve changing products, managers, and other firm factors and concerns that may dilute the quality of management evidenced by winning the MBNQA. Consequently, we do not examine a longer period of time after winning the award.

Returns Studied

Unadjusted, raw returns and risk-adjusted market excess returns are evaluated in this study. Both are based on share prices alone, without dividends because dividends are not incorporated in the computation of the Standard & Poor's 500 Index. Raw returns are calculated using share price changes over one-year and five-year periods. Risk is measured on the basis of systematic risk over the most recent five-year period. Risk-adjusted market-excess returns are computed using the following model.

$$\text{Risk-adjusted Excess Return} = r_i - b (r_m)$$

Where:

r_i = return on the thirteen MBNQA winners in the sample over one or five years

b = systematic risk measured relative to the Standard & Poor's 500 index

r_m = return on the Standard & Poor's 500 index over the same one or five years

Table III presents performance metrics based on unadjusted returns, while Table IV presents performance information for risk-adjusted excess returns.

Performance Measures

Average portfolio returns are presented in the first row of the various panels in Table III and Table IV. In order to provide a consistent frame of reference, annualized returns for the five-year holding periods are exhibited in the tables. Given the small sample size, the performance of any single firm could dramatically sway the average and make it unrepresentative of the portfolio. Therefore, median returns are also exhibited in the second row within each panel. The third performance measure is the z-test statistic, which reveals whether the portfolio's return is significantly different from zero. The fourth rows show the results of t-tests that assess whether the annualized post-award returns are significantly different from the pre-award returns. One comparison is made between the performance before the award and the first year afterward. The second comparison is between the performance before the award and the five years after winning the MBNQA.

III. Results

Unadjusted Return Analysis

All Firms (Equal-Weighted) – Table III, Panel A

Average annualized portfolio returns range from 16.0 percent for the first year after winning the MBNQA to 21.3 percent for the five years following the MBNQA as exhibited in Table III. Median annualized returns rose from 5.9% to 11.2% after the announcement. An interesting aspect of the median returns information is its consistency during the one and five post-award years.

The significant z-scores indicate that we can have some confidence that raw returns exceed zero. Although it has the lowest average return, the consistency in post-award performance during the first year after award reception results in a significant z-test confidence level of 0.01 percent. Examination of the t-statistics reveals that company performance during the first post-award year is significantly better than performance during the five years prior to receiving the award at the 0.10 level.

Weighted Firms – Table III, Panel B

When firms are weighted by the percentage of the firm winning the MBNQA, the average and median annualized returns drop. The greatest decline is experienced in the pre-award time frame, where average returns fall from 17.7 percent to 2.9 percent. Returns of corporations with smaller divisions winning the MBNQA would be down-weighted as we move from Panel A to Panel B. Consequently, Panel B's lower annualized returns are consistent with the hypothesis that as firm performance declines, a larger proportion of the firm sought to rectify the situation by challenging itself to win the MBNQA. The smallest drop in annualized returns from Panel A to Panel B occurs in the year following award reception.

Exhibited z-test statistics indicate that return performance during the five years prior to award winning was not significantly different from zero. In light of the general advance in share prices over time, raw returns equal to zero would be subpar. The performance of weighted firms after winning the MBNQA over the first year and subsequent five years is significant at least at the 0.10 level. The limited significance of the paired t-test indicated that statements regarding better post-test return performance have to be made with caution.

Table III. Unadjusted Returns of MBNQA Winners			
Annualized performance			
	Performance During Prior Five Years	Performance During First Year After Award	Performance During First Five Years After Award
A. All Firms			
- Equal weighting of all corporations winning MBNQA			
Average	17.7%	16.0%	21.3%
Median	5.9%	11.2%	11.2%
z-test statistic	5.4%*	1.0%***	2.0%**
t-test statistic	---	9.0%*	38.3%
B. Weighted Firms			
- Return weighted by the employee-based percentage of corporation winning MBNQA			
Average	2.9%	6.8%	10.7%
Median	0.2%	0.3%	1.5%
z-test statistic	7.7%	7.4%*	3.9%**
t-test statistic	---	26.3%	10.7%
C. Whole Firms			
-- Based solely on three instances of entire corporation winning MBNQA			
Average	-3.9%	20.8%	24.6%
Median	-3.9%	13.5%	19.7%
z-test statistic	96.4%	10.8%	2.4%**
t-test statistic	---	20.8%	8.6%*
* = 0.10, ** = 0.05, *** = 0.01			

Whole Firms – Table III, Panel C

Important differences exist in the annualized return performance of the whole-firm MBNQA winners before and after winning the award. Before winning the MBNQA, the average annualized return is a negative 3.9 percent. Post-award, the average annualized return rises to 20.8 percent and continues to build on this to a five-year annualized average of 24.6 percent. Given the lower return during the year immediately following the award, the average annualized return over the remaining four years is 25.5 percent (i.e., $((24.6\% \times 5) - 20.8\%) / 4$). Median returns follow suit, rising dramatically for this entire-firm portfolio after the MBNQA is won.

Measures of statistical significance reinforce the observations made regarding the returns themselves. Performance during the subsequent five years is statistically different from zero and from the performance prior to award receipt at the 0.05 and 0.10 levels, respectively. Having any significance with so few degrees of freedom illuminates the value of company quality implied by winning the MBNQA. Looking across Table III’s panels, it appears as though entire-firm winners benefited the most from winning the MBNQA. This result is consistent with the findings of Krueger and Wrolstad (1997).

Risk-adjusted, Market Excess Returns Analysis

All Firms (Equal-Weighted) – Table IV, Panel A

A typical award-winning firm earns a positive, risk-adjusted market-excess return both before and after the MBNQA is received. Beyond that small similarity, the advantages of winning the MBNQA are quite evident in Table IV, which reports risk-adjusted, market-excess returns. After the award announcement average annualized returns jump over ten percent in the first year. During the entire five-year post-award period, average annualized returns are thirteen percent higher. Median annualized returns experience an even more dramatic rise from -9.2% to 12.6% in the five year post-award period, a very impressive improvement!

As discussed in the research method section above, a range of factors beyond firm quality could impact short-run firm performance. This confounding effect is evident when looking at the statistical measures of relative performance. As shown in the second column of Panel A, the first post-award year has an 11.4 percent average annualized return and a higher median return than the five post-award years. However, this performance is not statistically different from zero or the pre-award performance. Adding the additional four years as shown in the third column, results in a return distribution that is significantly different from zero and different from the returns earned before winning the MBNQA.

Weighted firm – Table IV, Panel B

A similar dominance of risk-adjusted, market-excess performance after the MBNQA can be witnessed in the weighted-firm portfolio. Returns before the award are negative, reaching the lowest percentage rate observed in this study. Average annualized returns rise from a negative 16.7% to a positive 1.3%, and then continue to rise to 7.5% over the entire five post-award years. This amounts to a change of 24.2 percent (i.e., $7.5\% - (-16.7\%)$).

Investors appear to pay more for firms run by TQM-focused managers. Returns during the first year are significantly different from those before the award at the 0.10 level. Looking over to the annualized return over the five post-award years, one finds returns that are significantly different from zero at the 0.10 level and from the pre-award years at the 0.05 level.

Table IV. Risk-adjusted Market Excess Returns of MBNQA Winners			
Annualized Performance			
	Performance During Prior Five Years	Performance During First Year After Award	Performance During First Five Years After Award
A. All Firms			
- Equal weighting of all corporations winning MBNQA			
Average	0.9%	11.4%	13.9%
Median	-9.2%	12.6%	7.9%
z-test statistic	46.5%	22.3%	8.8% *
t-test statistic	----	48.1%	9.0% *
B. Weighted Firms			
- Return weighted by the employee-based percentage of corporation winning MBNQA			
Average	-16.7%	1.3%	7.5%
Median	-4.1%	0.6%	1.0%
z-test statistic	90.1%	35.0%	9.4% *
t-test statistic	----	10.0% *	5.0% **
C. Whole Firms			
-- Based solely on three instances of entire corporation winning MBNQA			
Average	-10.6%	1.8%	5.7%
Median	-10.6%	-2.2%	2.7%
z-test statistic	24.7%	45.5%	43.0%
t-test statistic	----	12.1%	1.4% **
* = 0.10, ** = 0.05, *** = 0.01			

Whole Firms – Table IV, Panel C

The three remaining firms that as a whole won the MBNQA experienced a similar jump in share price. Before the MBNQA announcement the average and median annualized returns were a negative 10.6 percent. During the five prior years, share prices dropped approximately forty-three percent (i.e., $1 - (1.0 - 0.106)^5$) on a risk-adjusted basis. Though not recovering the entire loss, the average gain was 1.8% in the first year, and an annualized rate of 5.7% during the five-year post award time frame.

One of the three entire-firm winners experienced a share price decline. Consequently, earning the MBNQA cannot be viewed as a guarantee of positive, risk-adjusted market-excess returns. However, on a comparative basis, the performance during the first year is almost significant at the 0.10 level. The addition of four years results in a comparative performance that is significant at the 0.05 level. This significance is not unexpected because after losing almost half of their value, investors in these shares experienced a risk-adjusted excess return of thirty-two percent (i.e., $(1.057)^5 - 1$). The finding of positive, risk-adjusted return performance is also consistent with Krueger and Wrolstad (1997).

IV. Summary and Conclusions

The Malcolm Baldrige National Quality Award (MBNQA) is an infrequently distributed award that encourages firms to use quality improvements to solve their business problems. Since its inception, only thirty-one awards were given to publicly-held companies in the categories studied. If you include privately-held companies, a total of thirty-two MBNQAs were awarded in the manufacturing, service, and small business categories over the first decade of the award and only twenty-two have been awarded over the most recent decade. Reasons for this decline were discussed above.

The lack of interest in the MBNQA may arise from the costs of application and/or the low probability of winning the award. If the costs of applying are high and the expected benefit is low, many firms might view applying for the MBNQA as being a project with an anticipated negative net present value. In order to assess this explanation for the dearth of recent applicants and assess the economic value of winning the MBNQA itself, we studied the raw and risk-adjusted excess returns over the five-year periods leading up to and following announcement of the award.

Equally-weighted MBNQA winners had positive unadjusted returns that were significantly different from zero both before and after winning the awards. The award winners also had positive returns that were significantly different from zero when adjustment was made for the percentage of the firm winning the award. Whole firm award winners were found to have significantly higher returns over the post-award five-year period. When looking at risk-adjusted market excess returns, the all-firms, weighted-firms, and “whole-firm” portfolios showed significantly better performance in the five year period after winning the award.

Winning the MBNQA is well-publicized evidence of successful efforts taken to enhance the quality of the management processes within the recipient firm. Share price performance of MBNQA winners rises after award announcement. In fact, in over half of the observed portfolios studied, significant raw or risk-adjusted market excess returns were present. Therefore, it appears as though investors positively reacted to the superior managerial skills and efforts of the MBNQA winners. Further study may want to look into benefits of investing in MBNQA winners over even longer post-award periods or search for other factors driving recent limited participation in the MBNQA competition.

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