

# Show Me The Money!!!

## Do Quality Award Recipients Outperform Their Benchmarks ?

Ron Schulingkamp  
Analysis of Research

*The Impact of Total Quality Management (TQM) on  
Financial Performance:*

*Evidence from Quality Award Winners*  
by

Kevin B. Hendricks  
Richard Ivey School of Business  
The University of Western  
Ontario  
London, Ontario N6A-3K7  
CANADA

Vinod R. Singhal  
DuPree College of  
Management  
Georgia Institute of  
Technology  
Atlanta, GA 30332

# General Public Awareness

- 1981 famous NBC-TV White Paper “If Japan Can Why Can’t We?”
- *If Japan can... Why can’t we?* was a white paper broadcast by NBC in 1980, credited with beginning the Quality Revolution and introducing the methods of W. Edwards Deming to American managers

# **Weakness in American Management**

- **Market after market appeared to be irrevocably lost to foreign competition, and the momentum was negative.**
- **Across a broad front of industries American enterprises looked simply incompetent. Still worse, U.S. management either didn't appear to understand the methodological and philosophical**

# Improvement is a 4 Letter Word

- Many managers were erroneously seduced by simple prescriptions
- The mantra that “Quality is Free.” (Crosby 1979).
- Still others thought only of technical interventions like statistical control charts or Japanese inspired quality circles would solve the problem.
- When these were attempted on their own outside of a comprehensive SYSTEM, they yielded little benefit.

# Then Came Quality Awards

- The first recipients in the 1980's Xerox and Motorola, both of whom were in mortal danger from foreign quality competition, have both competed successfully with the Japanese.
- Motorola's pioneered "Lean Six Sigma" strategy on process capability and process control, and of its focus on cycle-time
- Xerox created the "Competitive Benchmarking" approach to setting performance targets and identifying best practices

## **Next Came the Critical Articles in Management and Media**

- **“Is TQM Dead” was the question posed by USA Today (1995) when it featured an article announcing the 1995 Baldrige Award.**
- **A Wall Street Journal article raised the issue “Is Total Quality Management (TQM) yesterday’s news or does it still shine?”.**

## More Critical Media

- The Washington Post (1993) wrote about “Totaled Quality Management”,
- The Economist (1992, 1995) talked about “The Cracks in Quality” and the “Straining of Quality”, and an article on management fads in Business Week
- (Byrne, 1997) proclaimed that “TQM is as dead as a pet rock”.

# The Study - Performance Measure

- To establish the value of TQM, it is important to link it to financial measures.
- Stock price performance is of great interest to many stakeholders including senior management, employees, suppliers, mutual fund managers,
- Institutional and other individual investors. Many believe that goal of a firm should be to maximize its share value
- The Triple Bottom Line is NOT considered

# Why Stock Price

- In the long-run stock prices are driven by profits (or net cash flows). Our study examined
- Profit performance by estimating the changes in operating income, defined as net sales less cost of goods sold and selling and administrative expenses.

# Measure Efficiency

- Improvement in efficiency is measured by estimating the percent change in return on sales and return on assets. Return on sales is the ratio of operating income to sales and measures the profit per dollar of sales.
- Return on assets is the ratio of operating income to assets and measures the profit per dollar of assets (this is not a good measure due to inventory –drives waste)

# Awards as Proxies

- **Winning quality awards are used as a proxy for effective implementation of TQM. A review of various quality award criteria confirmed that the core concepts and values emphasized are those that are widely considered to be the building blocks of effective TQM implementations**

# Study Sample – 2 Types

- The study sample represents award winners from about 140 different award givers, some of which are listed in Table 1.
- **Customer Awards:** Many award givers are customers who have developed quality award systems for their suppliers. These include most major automobile manufacturing firms in the United States. and many other large manufacturing firms.

# Study Sample – 2 Types

- The study sample represents award winners from about 140 different award givers, some of which are listed in Table 1.
- **Independent Organizations** such as the Baldrige Award and various states in the United States

# Awards – Customer & Independent

**Table 1:** Names of some quality award givers whose award recipients are included in the sample  
Customers that give awards to their suppliers

Auto Alliance International Inc. (Part of Mazda Motor Manufacturing)  
Chrysler Corp.  
Consolidated Rail  
Eastman Kodak Co.  
Ford Motor Co.  
General Motors Corp.  
General Electric  
Goodyear Tires  
GTE Corp.  
Honda of America Manufacturing Inc.  
International Business Machines  
J. C. Penny & CO  
Lockheed Corp.  
Minnesota Mining and Manufacturing  
National Aeronautical and Space Authority  
New United Motor Manufacturing Inc. (NUMMI)  
Toyota Motor Manufacturing U.S.A Inc.  
Nissan Motor Manufacturing Corp. U.S.A  
Pacific Bell  
Sears Roebuck & Co.  
Texas Instrument Co.  
TRW Inc.  
Xerox Corp.  
Union Carbide  
Westinghouse  
Whirlpool

are included in the sample

Independent Award Givers

Alabama Senate Productivity & Quality Award  
Arizona's Pioneer and Governor's Award for Quality  
California Governor's Golden State Quality Awards  
Connecticut Quality Improvement Award  
Delaware Quality Award  
Florida Governor's Sterling Award  
Massachusetts Quality Award  
Maryland Senate Productivity Award  
Maine State Quality Award  
Michigan Quality Award  
Minnesota Quality Award  
Missouri Quality Award  
National Association of Manufacturers ( The Shingo )  
National Institute of Standards and Technology (Baldrige)  
North Carolina Quality Leadership Award  
New Mexico Quality Award  
New York Governor's Excelsior Award  
Nebraska Edgerton Quality Award  
Oklahoma Quality Award  
Oregon Quality Award  
Pennsylvania Quality Award  
Rhode Island Award for Competitiveness and Excellence  
Texas Quality Award  
Tennessee Quality Award  
Virginia Senate Productivity & Quality Award  
Washington State Quality Award

# Sample Size

- Overall the sample consists of **3,000** different firms that have won quality awards.
- To avoid biases associated with asking winners to self-judge the impact of TQM, the sample of winners is further restricted to include only publicly traded firms.

# Sample Size

- Overall the sample consists of **3,000** different firms that have won quality awards.
- The final sample consists of about **600** winners representing nearly **50** distinct two-digit Standard Industrial Classification (SIC) Codes, with **75%** of the sample winners coming from the manufacturing sector.

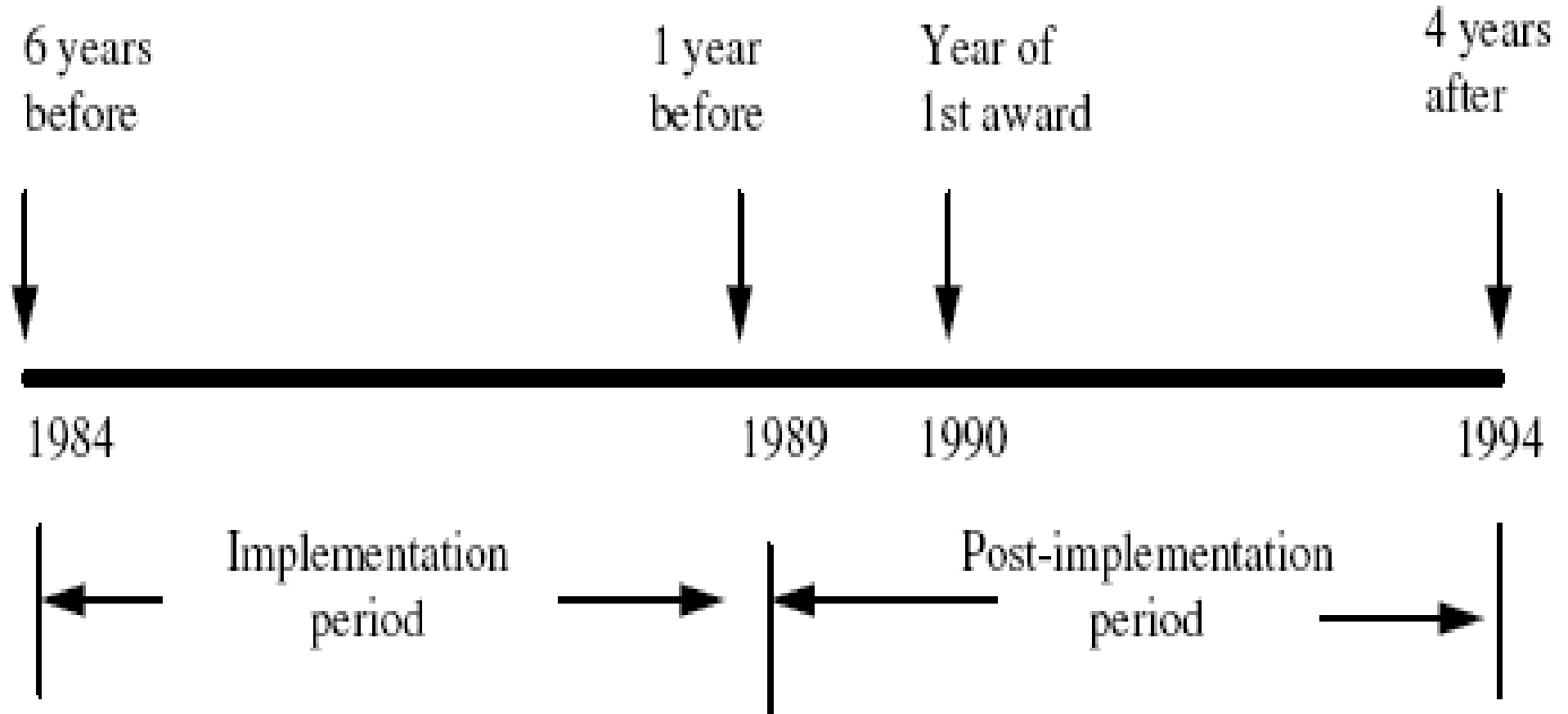
# Time Evaluation – 10 Years

- Performance over two five-year periods was studied. The first period -the post implementation period- starts one year before and ends four years after the date the winners won their first quality award.

# Time Evaluation

- The second period -the implementation period- starts six years before and ends one year before the date the winners won their first quality award.
- It is during this time periods that winners are implementing TQM and incurring the associated implementation costs.

# Figure 1: Determining the implementation and the post-implementation periods for a firm that won its first quality award in 1990.



# Study Comparisons

- **Given the performance of all firms is influenced by industry and economic conditions which may have nothing to do with whether firms have an effective TQM implementation. !!!!!**

# Study Comparisons

- **Benchmarks serve the purpose of adjusting a firm's performance for the relevant industry and economic influences. Stock market portfolios such as the S&P 500 were used to benchmark the stock price performance of winners.**
- **Performance variables a sample of benchmark firms was generated by matching each award winner to a benchmark firm of similar size & industry.**

# Results of Study

- No significant differences in performance are observed during the implementation period.
- Basically, there was no difference in the performance of the winners and the benchmarks.
- This is good news since one would have expected worsening stock performance during this period because of the direct and indirect costs in implementing TQM.

# Results of Study

- Results for the post-implementation period indicate that quality award winners outperformed the benchmarks on almost every performance measure. Figure 2 compares the stock price performance of award winners against the various benchmark portfolios using the following process. For each award winner, a hypothetical \$100 is invested in the winner's stock one year prior to the date of winning their first quality award.

# Results of Study

- At the same time an equal amount is also invested in a benchmark portfolio. Both investments strategies are tracked for the next five year.
- At the end of five years the average stock price return from holding the stocks of the award winners is compared against the average returns from investing in the benchmark portfolio.

# Show Me the Money

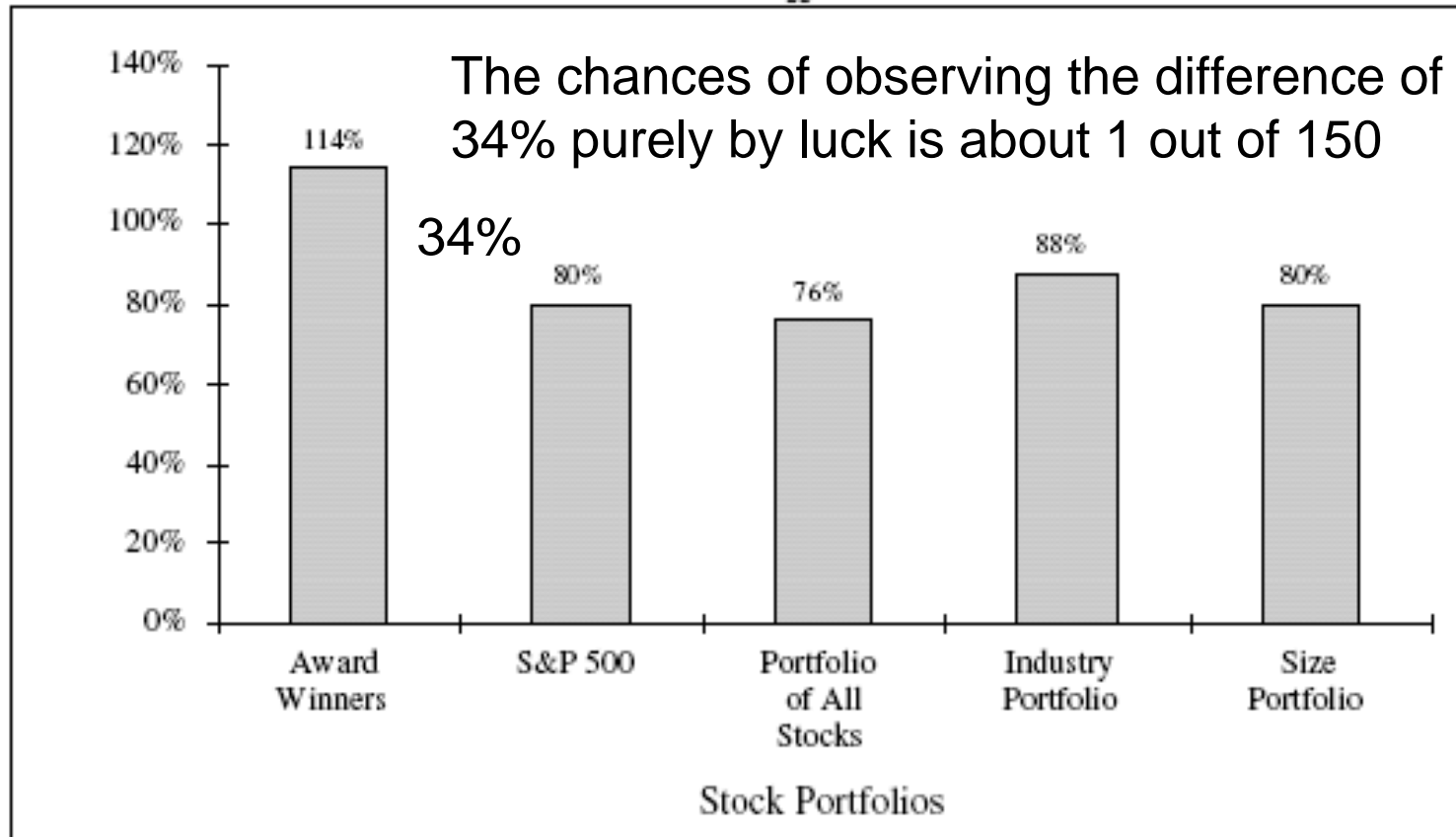
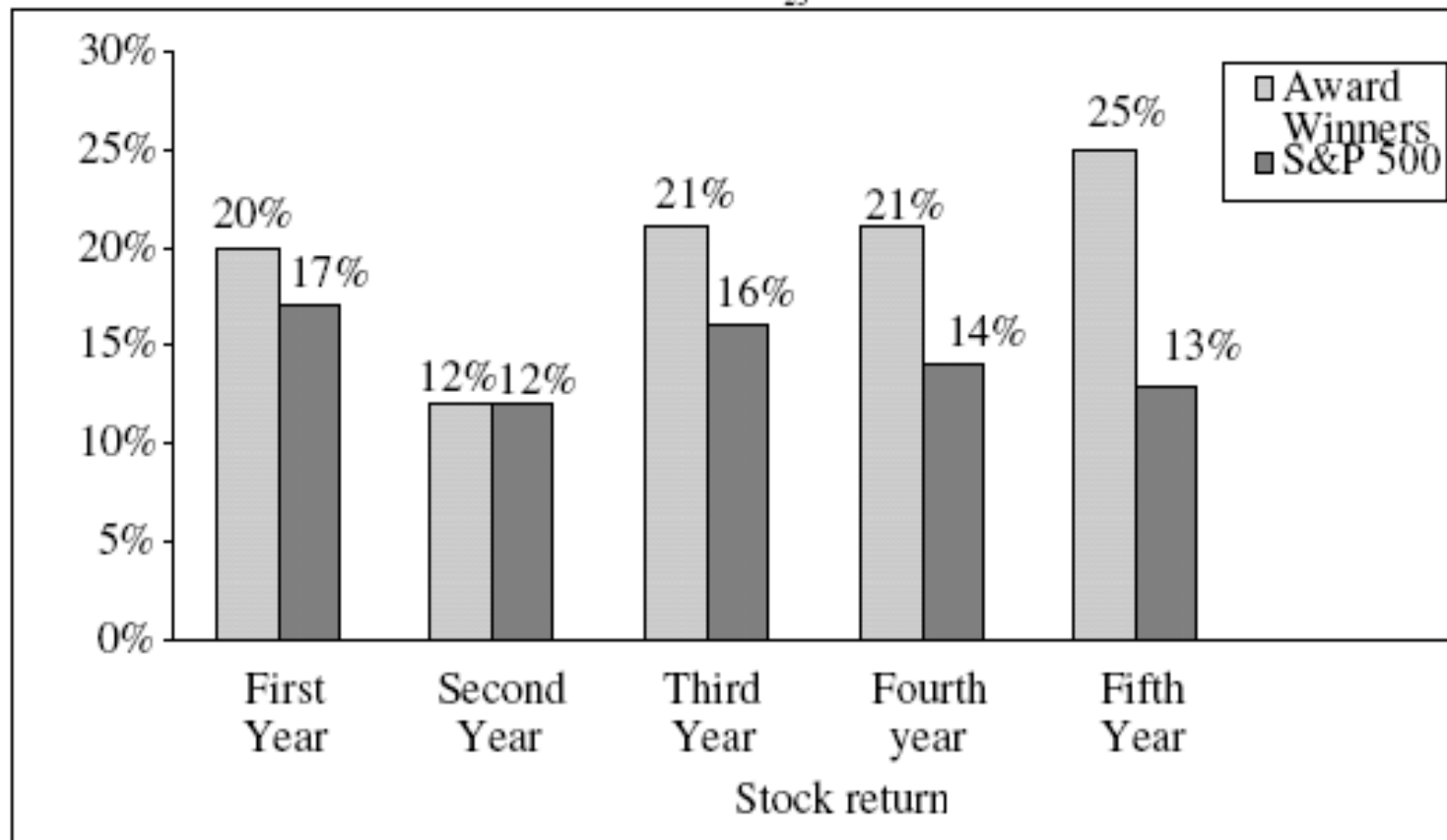


Figure 2: Comparison of the stock price performance of award winners and various benchmark portfolios. The results depict the changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Performance – 5 Years



Award winners beat the S&P 500 in the third year by 5%, fourth year by 7%, and in the fifth year by 12%.

Figure 3: Comparison of the stock price performance of award winners and the S&P 500 on an annual basis. The results depict the annual changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Post Implementation – 5 Years

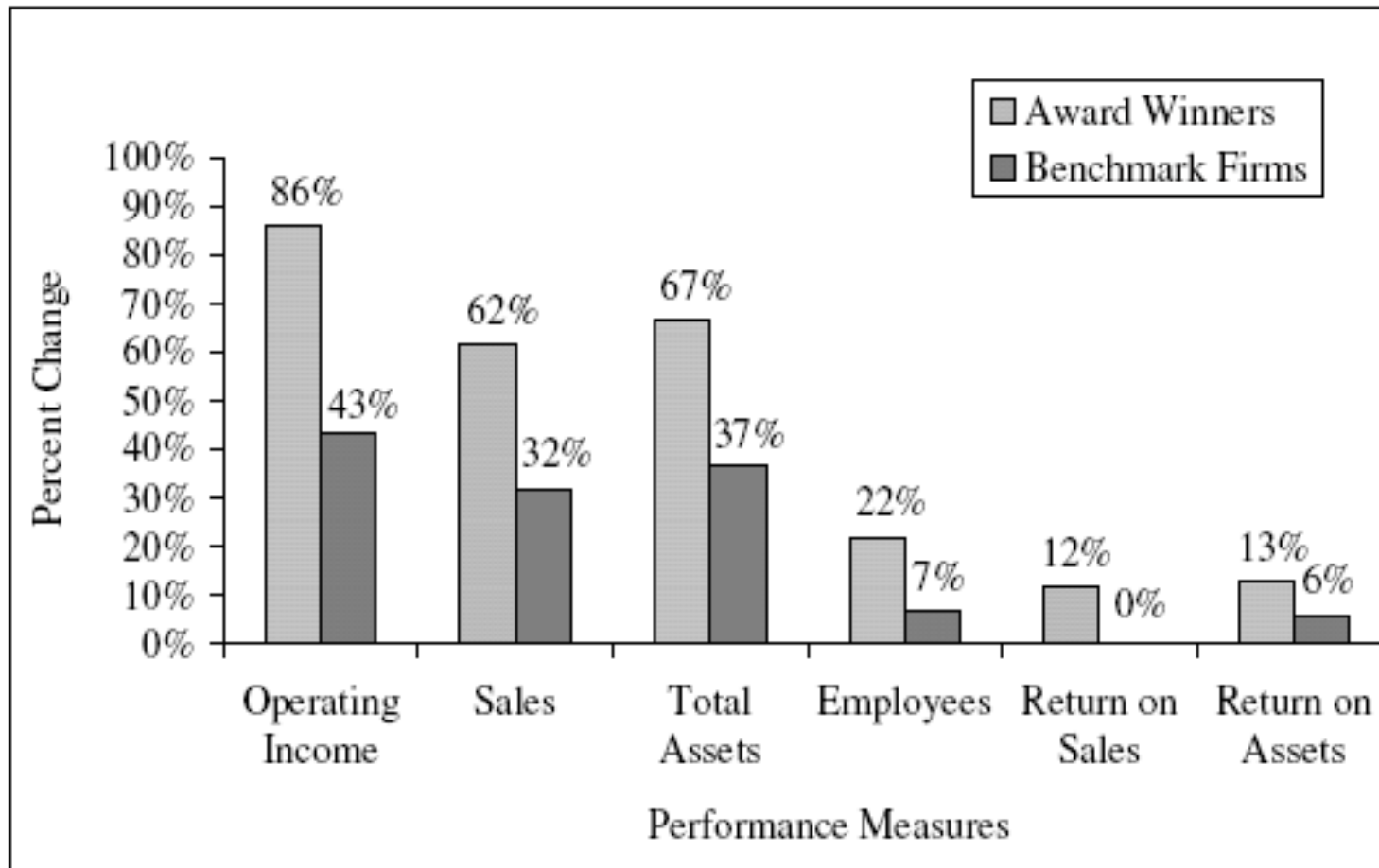


Figure 4: Comparison of the average percent change in performance of award winners and benchmark firms for the post implementation period. The results depict the changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Type of Award

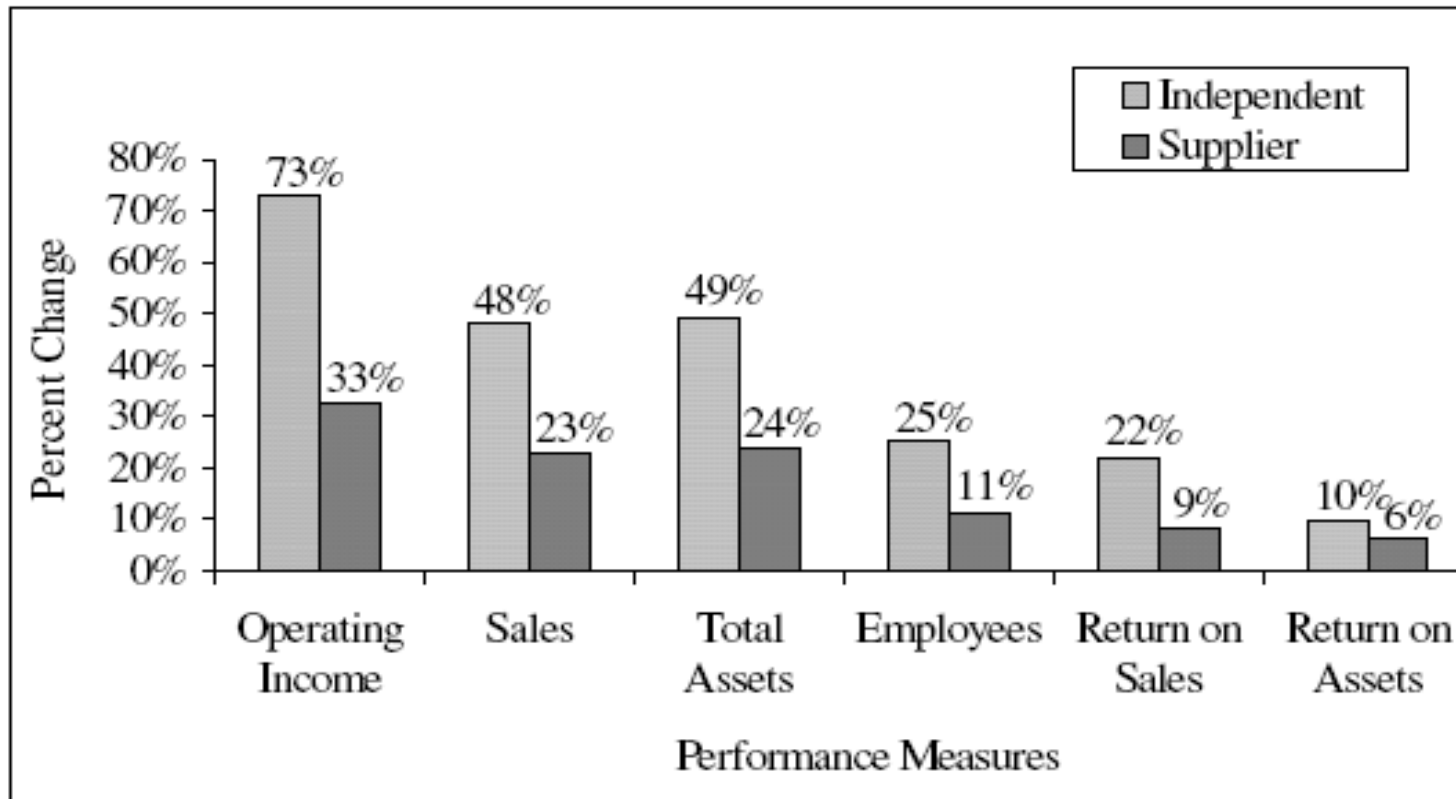


Figure 5: Comparison of the average percent change in performance of independent award winners and supplier award winners. All performance numbers are the average of the differences between the performance of the winners and their respective benchmarks. The results depict the changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Low vs. High Capital

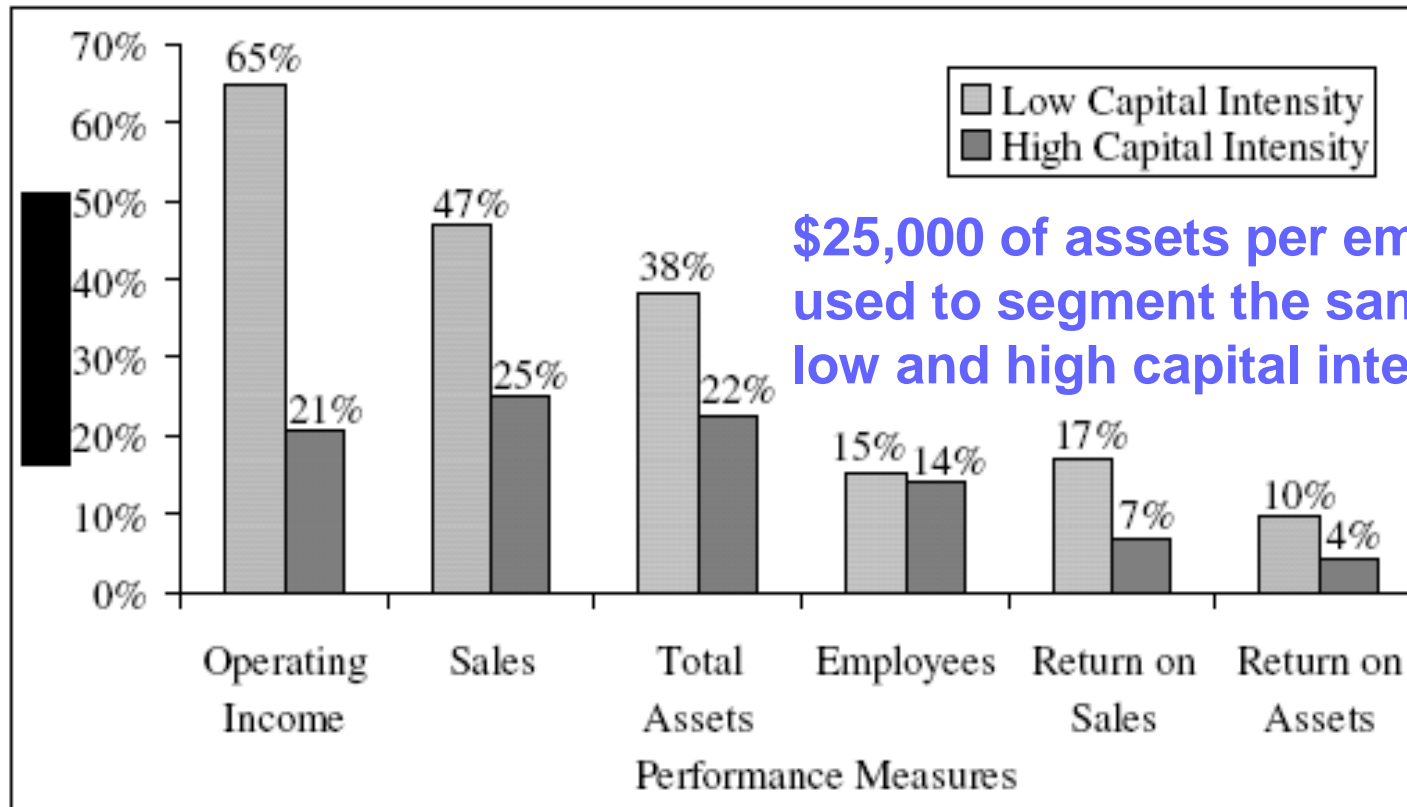


Figure 6: Comparison of the average percent change in performance of lower capital and higher capital intensity award winners. All performance numbers are the average of the differences between the performance of the winners and their respective benchmarks. The results depict the changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Small vs. Large

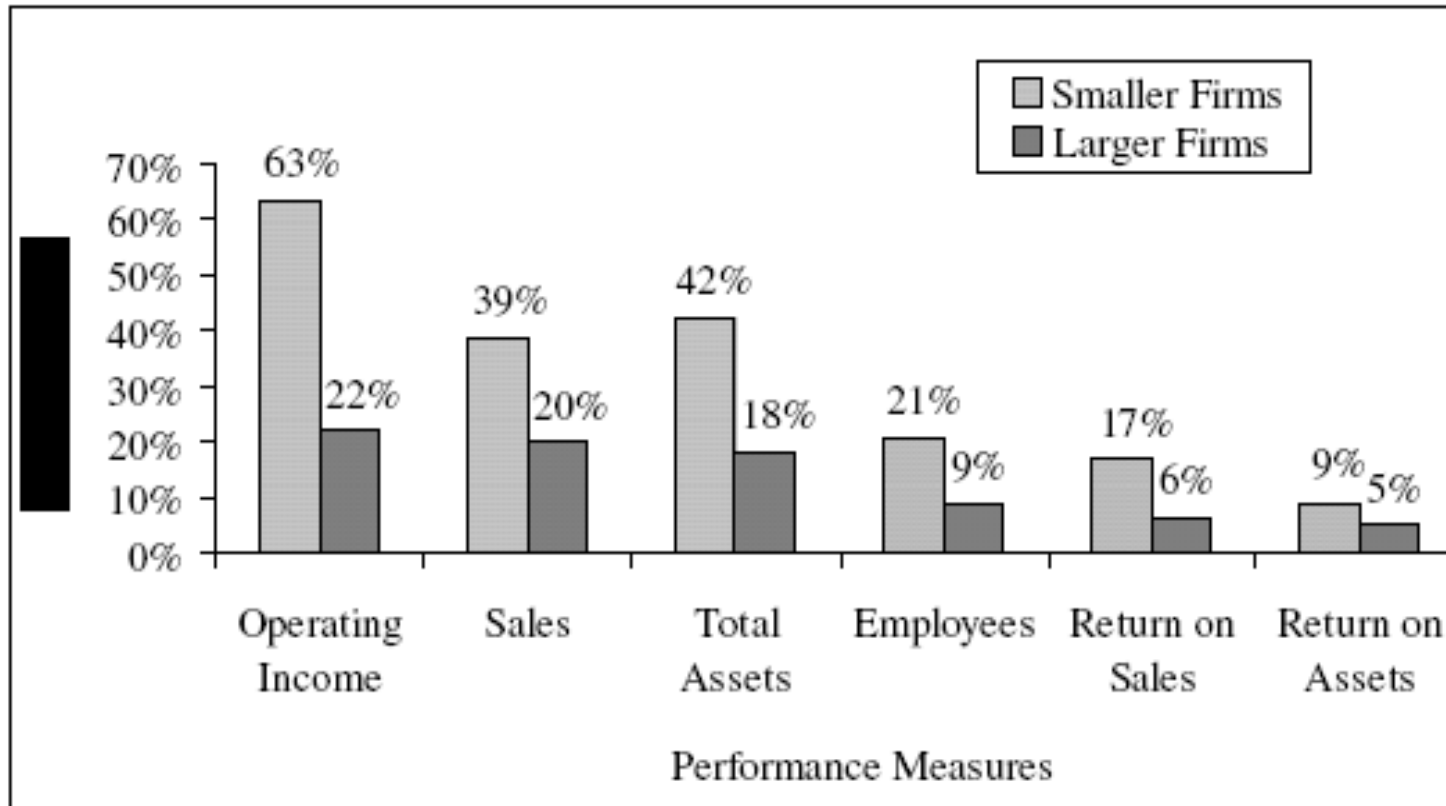


Figure 7: Comparison of the average percent change in performance of smaller and larger award winners. All performance numbers are the average of the differences between the performance of the winners and their respective benchmarks. The results depict the changes in performance over the five-year post-implementation period that starts one year prior and ends four years after the date of winners winning their first quality award.

# Focused Vs. Diversified

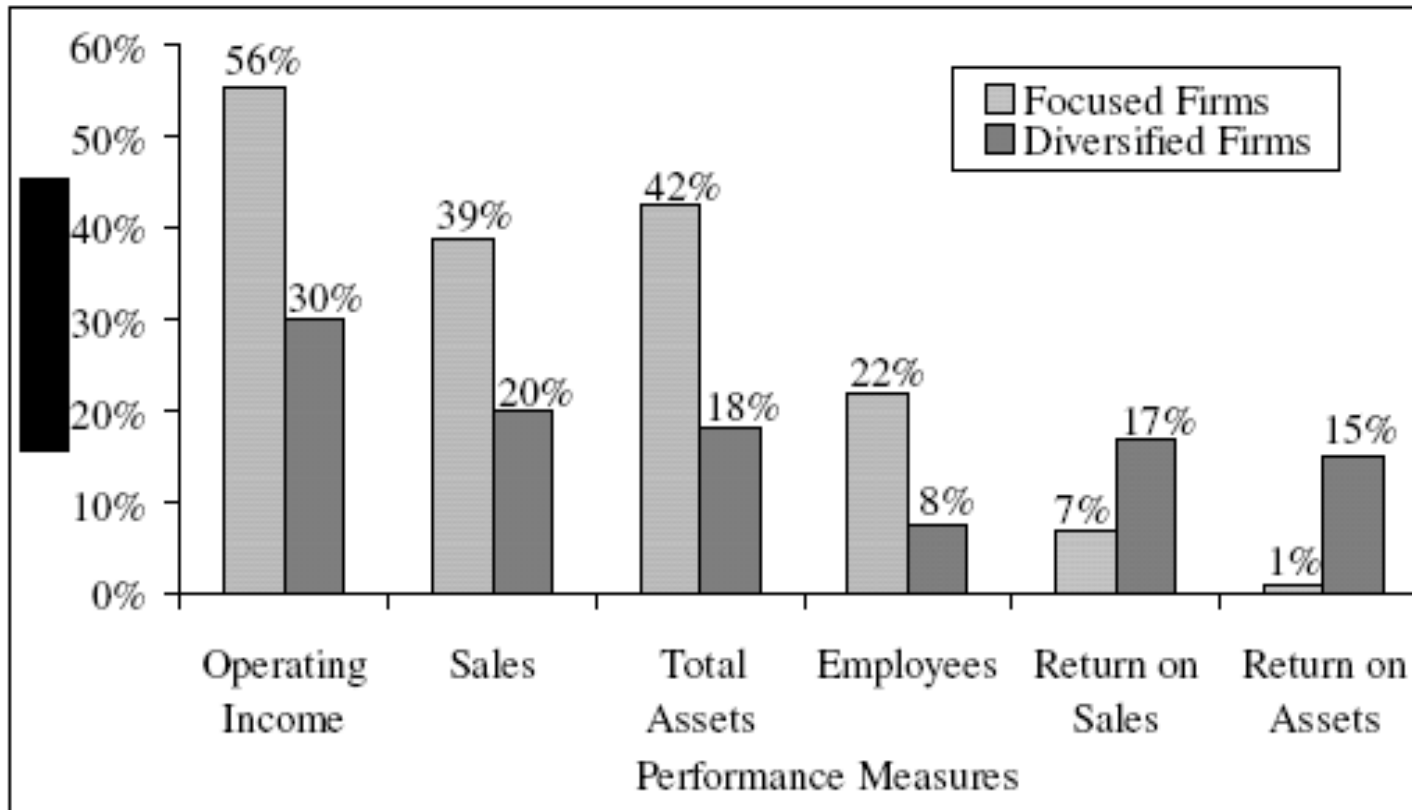


Figure 8: Comparison of the average percent change in performance of focused and diversified award winners. All performance numbers are the average of the differences between the performance of the winners and their respective benchmarks. The results depict the changes in performance over the five-year post-implementation period, which starts one year prior and ends four years after the date the winners won their first quality award.