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THE CENTRE OF QUALITY EXCELLENCE

REPORT ON EFQM AND BQF FUNDED STUDY INTO THE IMPACT OF THE EFFECTIVE IMPLEMENTATION OF ORGANISATIONAL EXCELLENCE STRATEGIES ON KEY PERFORMANCE RESULTS

**Dr Louise Boulter, The Centre of Quality
Excellence, The University of Leicester**
**Professor Tony Bendell, The Centre of Quality
Excellence, The University of Leicester**
**Ms Hanida Abas, The Centre of Quality
Excellence, The University of Leicester**
**Professor Jens Dahlgaard, Linköping University,
Sweden**
**Professor Vinod Singhal, Georgia Institute of
Technology, US**

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Executive Summary

There is a plethora of descriptive literature concerning the relationship between Total Quality, Excellence and organisational performance. However, many of the previous research studies in Europe on the link between the EFQM Excellence Model and organisational performance have used survey methodology or case studies to collect data and not robust publicly available sources. To bridge this potential subjectivity gap in the knowledge base the European Foundation for Quality Management (EFQM) and the British Quality Foundation (BQF) has sponsored research to identify the correlation between the adoption of the principles of the EFQM Excellence Model and improved business performance. This report presents an independent, objective and unbiased assessment between the effective implementation of the principles of the EFQM Excellence Model and improved business performance. Financial performance, based on share value and accountancy based measures, have been computed for award winning companies. The overall evidence from the study indicates that when the principles of the EFQM Excellence Model have been implemented effectively performance improves in both short and long time periods.

1 Introduction & Background

The European Foundation for Quality Management (EFQM) Excellence Model is a tool and method that helps organisations achieve business success by measuring where they are on the path to excellence; helping them understand the gaps; identifying potential solutions for bridging the gap; and providing an approach for implementing the gap-bridging solutions.

The EFQM Excellence Model was introduced in 1992 as the framework for assessing applications for The European Quality Award. The EFQM Excellence Model is now widely used throughout Europe and has become the basis for national and regional awards in Europe and other parts of the world. In addition, the EFQM Excellence Model is used by organisations as a tool for organisational self-assessment. The widespread use and popularity of the EFQM Excellence Model has raised the issue about its impact on business performance. The most reliable data to investigate this would be that already publicly available from publicly traded companies. However, whilst articles and case studies have been written about the EFQM Excellence Model, and whilst in the US a comprehensive study has been conducted by Professor Vinod Singhal and Dr. Kevin Hendriks that clearly demonstrates a positive link between the adoption of principles of Excellence such as embedded in the Malcolm Baldrige National Quality Award Model and improved organisational results, there has been little systematic study of the impact of the principles of the EFQM Excellence Model on business performance in Europe.

To bridge this gap in the knowledge base about the Excellence Model, the European Foundation for Quality Management (EFQM) and the British Quality Foundation (BQF) has sponsored research to identify the correlation between the adoption of the principles of the EFQM Excellence Model as a management system and improved business performance results in Europe. This research has been conducted by an international team of researchers including; Dr Louise Boulter, Project Director and Deputy Director

of the Centre of Quality Excellence, the University of Leicester, UK, Professor Tony Bendell, Professor of Quality & Reliability, Director the Centre of Quality Excellence, the University of Leiceser, UK, Hanida Abas, Research Associate, the Centre of Quality Excellence, The University of Leicester, UK, Professor Jens Dahlgaard, Professor of Quality Technology and Management, Linkoping University, Sweden and Professor Vinod Singhal, Professor of Operations Management, at the Georgia Institute of Technology, US.

The following sections report on the methodology and overall key findings from the study.

2 Methodology

The methodology that has been used to conduct this study is similar to the methodology that Singhal and Hendricks (1997) used to conduct the US study, and is described in the next Section of this report.

There is a plethora of descriptive literature concerning the relationship between Total Quality, Excellence and Organisational Performance. However, many of the previous research studies in Europe on the link between the EFQM Excellence Model and organisational performance have used survey methodology or case studies to collect data. Whilst these studies have provided valuable information on how the EFQM Excellence Model is perceived, and implemented, these studies have a number of shortcomings with the most serious one being the inability to independently assess the effectiveness of the implementation of the EFQM Excellence Model and its impact on financial performance. Most studies collect data based on management perceptions that can be biased because the person responding to the survey may not have all the relevant information. Furthermore, the surveys rarely ask for objective performance data due to the concern that this would significantly lower the response rates as the respondents would naturally

be worried about the confidentiality of the data. In addition, the response rate tends to be low.

To overcome such shortcomings, the survey approach has not been used. Instead data has been collected from publicly available sources. This includes data from audited financial statements of publicly traded companies. This has enabled an independent, objective and unbiased assessment to be made of the correlation between the effective implementation of the principles of the EFQM Excellence Model as a management system and improved business performance results in Europe.

2.1 Identifying Companies that have Effectively Implemented the Principles of Business Excellence

To identify companies that have effectively implemented the principles of the EFQM Excellence Model the analysis has been focused on companies that have been recognised for their efforts in the form of quality awards. The system of quality awards is well established within Europe as is evidenced by the EFQM Excellence Model based awards that are awarded at European, National, and in the cases of some countries, Regional level. An important objective of award giving organisations is to recognise companies that have done an outstanding job in implementing the principles of Excellence. To maintain credibility and the value of awards, award-giving organisations have strong incentives to give awards to only those companies that have implemented Excellence in an effective manner. Award giving organisations typically decide on winners after conducting an independent evaluation and assessment of a company's practices and measuring a company's performance. Thus, winning a quality award in Europe is generally an indication that a company has effectively implemented the principles of the EFQM Excellence Model.

The names of award winners were obtained directly from a number of sources including award giving organisations such as the EFQM, BQF and National Partner Organisations

(NPOs), and from information obtained by conducting on-line searches using key word and domain names. To ensure objectivity in collecting data on financial performance, the data collection and analysis efforts has been focused only on publicly traded companies. On-line databases such as Hoovers, Hemscofts and Carol were used to identify whether an award winner is a publicly listed company. In many instances quality awards are given to a particular unit or division of a company for which no individual financial data is accessible in the public domain, therefore similar to the previous study by Professor Vinod Singhal and Dr Kevin Hendriks, it is the parent's financial information that has been used in the analysis. The Datastream database (a financial database for publicly listed companies) was used as the primary source for share price and accounting data for the study.

2.2 Performance Measures

To establish the link between the effective implementation of the principles of the EFQM Excellence Model and organisational performance it is important to consider financial measures. Two sets of performance measures have been used for this study. Share price performance is important to various stakeholders including senior management, employees, suppliers, mutual fund managers, institutional and individual investors. Therefore, a primary measure for this study is the return on shares that an investor would have earned by investing in companies that have effectively implemented the principles of the EFQM Excellence Model. Other financial measures of organisational performance are accounting based measures. Accounting based measures that have been used in this study include; revenue/sales, cost, operating income, capital expenditure, total value of assets and number of employees.

2.3 Period of Time for Analysing Performance

Any attempt to identify the correlation between the effective implementation of the principles of the EFQM Excellence Model and improved financial performance needs to examine performance over a reasonably long period of time. This is because the principles of the EFQM Excellence Model require a suitably long horizon to be fully absorbed and integrated in the normal operating mode of how things are done at a company.

In this study where data has been available, the change in the performance of companies has been analysed over an 11 year time period anchored around the year when a company received its first award. To measure the net benefits from the effective implementation of the principles of the EFQM Excellence Model share value and accounting based performance measures have been computed before and after a company has received a first award. The first period of time, “the implementation period” starts 5 years before and ends one year before a company received a first award. The second period of time, “the post implementation period” starts one year before and ends 5 years after a company received a first award.

Figure 1 illustrates the implementation and post implementation periods for a company that received a first award in 1995. In this case, the implementation period would cover the years from 1990 to 1994 and the post implementation period would cover the years from 1995 to 2000. It should be noted that the performance of the award winning companies used in this study has not been analysed over the same calendar time period. The time period over which performance has been analysed is unique to each award winning company and is dependent upon when each of the companies won its first award.

2.4 Selecting Comparison Companies

Industry and economic conditions, whether prevailing in a specific country at a particular point in time or a specific industry impact upon the performance of all companies, and this will be true whether or not a company has effectively implemented the principles of the EFQM Excellence Model. To compare the performance of companies that have effectively implemented the principles of the EFQM Excellence Model and to adjust for country and industry economic conditions, comparison companies have been selected. For each award winning company a comparison company was selected based on key criteria. This is that the comparison company;

- i. Has the same country of incorporation of the parent company
- ii. Has the same accounting data available over at least the same time period
- iii. Has at least the same first digit industry code as classified by Datastream
- iv. Is closest in size as measured by total assets at the fiscal year end before the winning of a first award, with the constraint that the ratio of value of assets is always less than a factor of 3

3 Key Overall Results

It should be noted that key overall results report the average difference of percentage change in performance between each of the award winning companies and its comparison company. To control for outliers in this study that can influence the average (mean) values, the overall key results are reported after symmetrically trimming the data at 2.5% in each tail (this affects the mean but not the median).

The key results that are reported in the next Section are the 120 award winners studied. **Figure 2** shows parent company location.

3.1 Share Value

Share price performance has been analysed during the implementation and post implementation periods. The returns include capital gains, regular dividends and special dividends, having already been adjusted by Datastream for any stock splits.

Results for the post implementation period indicate that generally the award winning companies outperform the comparison companies up to 3 years after first winning an award and sometimes this is statistically significant. Whilst the comparison companies generally outperform the award winning companies in the implementation period, this is not statistically significant.

An analysis of the share price performance for the award winning companies reveals some interesting results. In the year that the award winning companies receive a first award, they experience on average a 3% higher return in share value compared to the comparison companies. Additionally, the award winning companies experience higher increases in share value up to three years after having received a first award compared to the comparison companies. By two years after having received a first award the award winning companies have experienced a higher return in share value by an average of 24%, and by three years after having received a first award the award winning companies have experienced a higher return by an average of 36%. The last two average differences of 24% and 36% are statistically significant.

Figure 3 depicts the average (mean) increase in share value experienced by the award winning companies compared to the comparison companies for first 3 years of the post implementation period.

3.2 Accounting Measures - Growth, Profit and Efficiency

This Section reports on the overall key results for the accounting measures of performance that have been used in this study.

3.2.1 Revenue/Sales

The growth rate in sales for the award winning companies has been computed. To control for such factors as acquisition and company size, an alternate proxy that has been considered is growth rate in sales over assets.

For total sales, during all of the reported implementation time period, the comparison companies outperform the award winning companies. However, during the post implementation period the award winning companies experience higher growth compared to the comparison companies. By one year after having received a first award, the award winning companies have experienced an 8% average higher growth in sales compared to the comparison companies. This increases to 10% two years after having received a first award, and 18 % three years after having received a first award. Compared to the comparison companies, the award winning companies have experienced a higher growth in sales by an average of 50% by four years after having received a first award and by an average of 77% by five years after having received a first award. These average are all statistically significant.

Figure 4 depicts average (mean) increases in sales experienced by the award winning companies compared to the comparison companies.

For sales over assets, the award winning companies experience higher performance in all the post implementation time period compared to the comparison companies. This starts immediately from year one. Two years after having received a first award the average difference of percentage change shows that the award winning companies have experienced an 8% higher growth. This average difference is statistically significant.

3.2.2 Costs

The change in the total cost and change in total cost over sales has been computed.

During the implementation period the award winning companies are already good at reducing costs. For cost over sales the award winning companies outperform the comparison companies in all of the reported post implementation period. This starts immediately from year one. By one year after having received a first award the award winning companies experienced a 1.5% reduction, this increases to a 4.4% greater reduction by five years after the winning. Some of the results are statistically significant.

Figure 5 depicts the average (mean) decreases in total cost over sales experienced by the award winning companies compared to the comparison companies during the post implementation period.

3.2.3 Operating Income

Changes in operating income, operating income over sales and operating income over assets have also been computed.

The results across the three operating income measures show similar patterns. It takes time for an award winning company to benefit in increases in operating income. The award winning companies outperform the comparison companies in all three operating income measures over a longer time period.

3.2.4 Other Accounting Based Measures

Other accounting based measures that have been computed in this study include; change in capital expenditure over sales, change in capital expenditure over assets, change in total assets and changes in the number of employees.

Award winning companies have generally increased their capital expenditure over assets ratio by a greater percentage compared to the comparison companies throughout the implementation and post implementation period. This is also true in the post implementation period for capital expenditure over sales ratio. By one year after having received a first award the award winning companies have experienced a higher increase in capital expenditure over assets ratio by an average of 13% compared to the comparison companies. This increases to 46% by four years after having received a first award. These differences are statistically significant. For capital expenditure over sales, by one year after having received a first award the award winning companies have experienced a higher increase by an average of 10% compared to the comparison companies. This increases to 30% by four years after having received a first award. These differences are statistically significant.

Figure 6 depicts the average (mean) decreases in capital expenditure over assets experienced by the award winning companies compared to the comparison companies during the post implementation period.

Figure 7 depicts the average (mean) decreases in capital expenditure over sales experienced by the award winning companies compared to the comparison companies during the post implementation period.

Consistent with the growth of sales, the growth in assets for the award winning companies shows a higher rate compared to the comparison companies. By one year after having received a first award the award winners have experienced a higher growth in

assets by an average of 12% compared to the comparison companies. This difference is statistically significant. This increases to 44% for the award winners by four years after having received a first award compared to the comparison companies.

Figure 8 depicts the average (mean) increases in assets experienced by the award winning companies during the post implementation period compared to the comparison companies.

During the implementation period compared to the comparison companies, award winning companies have a lower percentage growth in the number of employees. During the post implementation period the results show a mixed picture. Within a year of a first award there is a greater percentage growth in the number of employees in the award winning companies compared to the comparison companies. Up to 3-4 years after an award winner received a first award the comparison companies have a larger percentage growth in number of employees compared to the award winning companies. By five years after winning an award there is a greater percentage growth in the number of employees in the award winning companies compared to the comparison companies.

Figure 9 depicts the average (mean) increases and decreases in number of employees experienced by the award winning companies compared to the comparison companies during the post implementation period.

4 Concluding Comments

Compared to the limited descriptive evidence on the link between the principles of the EFQM Excellence Model and improved performance, the evidence presented in this report provides a more factual, objective and statistically valid assessment. To a limited extent, these results also support the view that it takes time for companies to benefit from an effective implementation of the principles of Excellence strategies. However, the overall evidence indicates that when the principles of the EFQM Excellence Model have been implemented effectively performance improves in both short and long periods of time. This should prove to be reassuring for those companies that have made an investment and long-term commitment to the principles of the EFQM Excellence Model. It provides evidence to support the continued commitment to the principles of the EFQM Excellence Model for those companies that might be thinking of replacing their Excellence strategy with something else. Furthermore, it provides positive evidence to those companies that are contemplating implementing the principles of the EFQM Excellence Model of the benefits that their company might reap from its effective implementation.

5 Reference

Hendricks, K. B. and Singhal, V. R. (1997), 'Does implementing an effective TQM program actually improve operating performance? Empirical evidence from firms that have won quality awards.' *Management Science*, Vol. 43 No. 9, pp. 1258-1274

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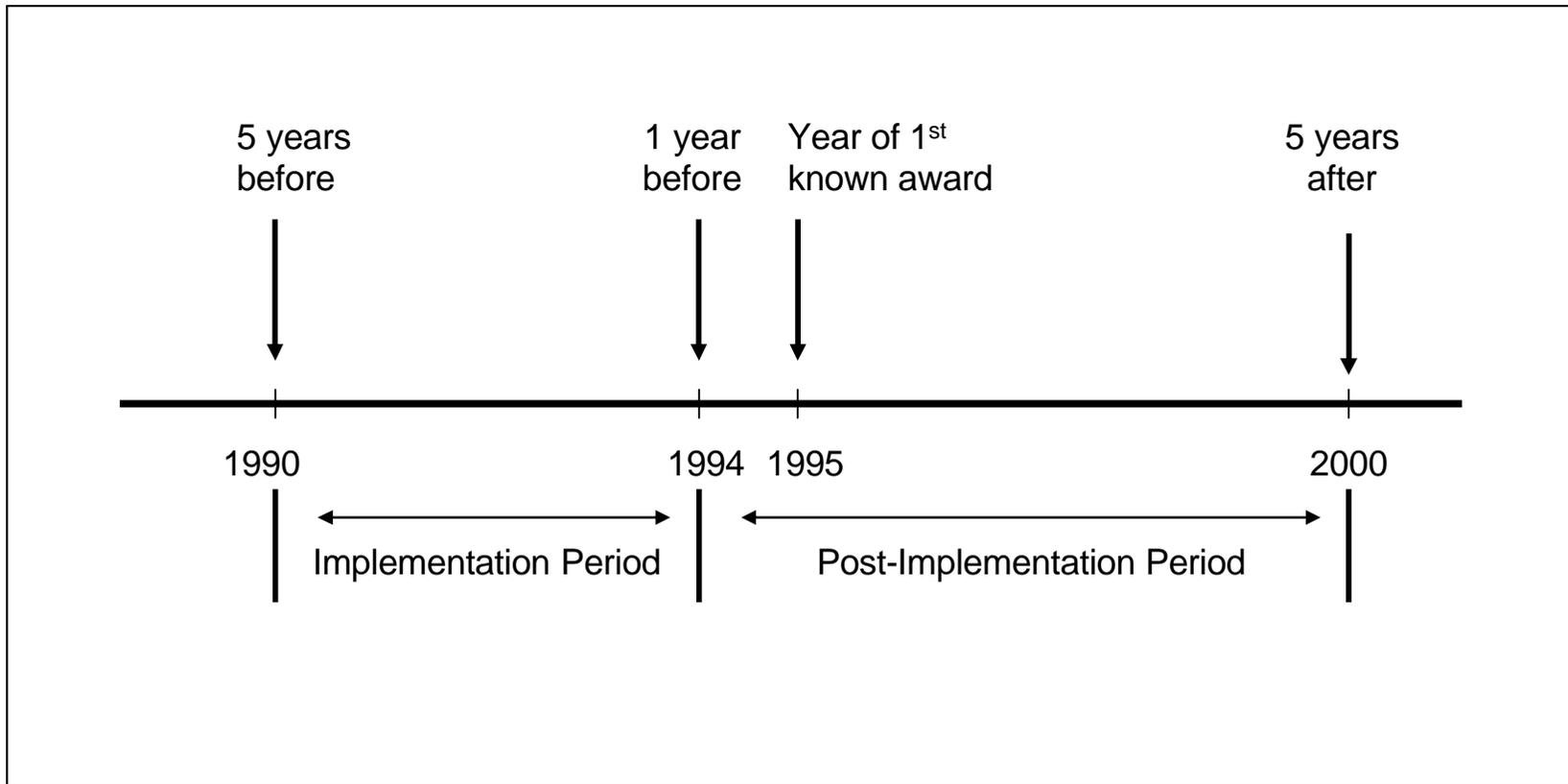


Figure 1: Determining the implementation and the post implementation time periods for a company that received a first award in 1995

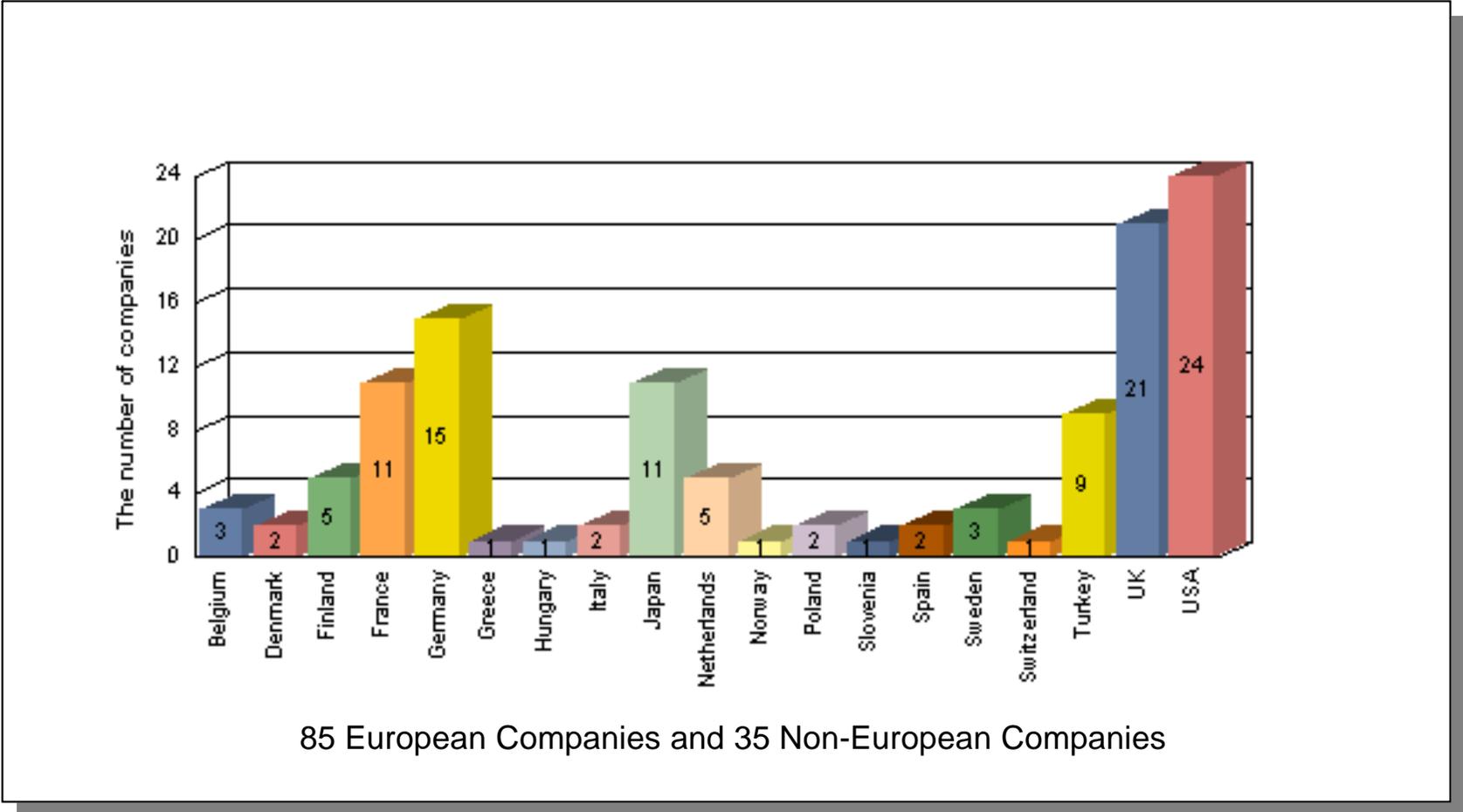


Figure 2: Country of location of parent company of award winners

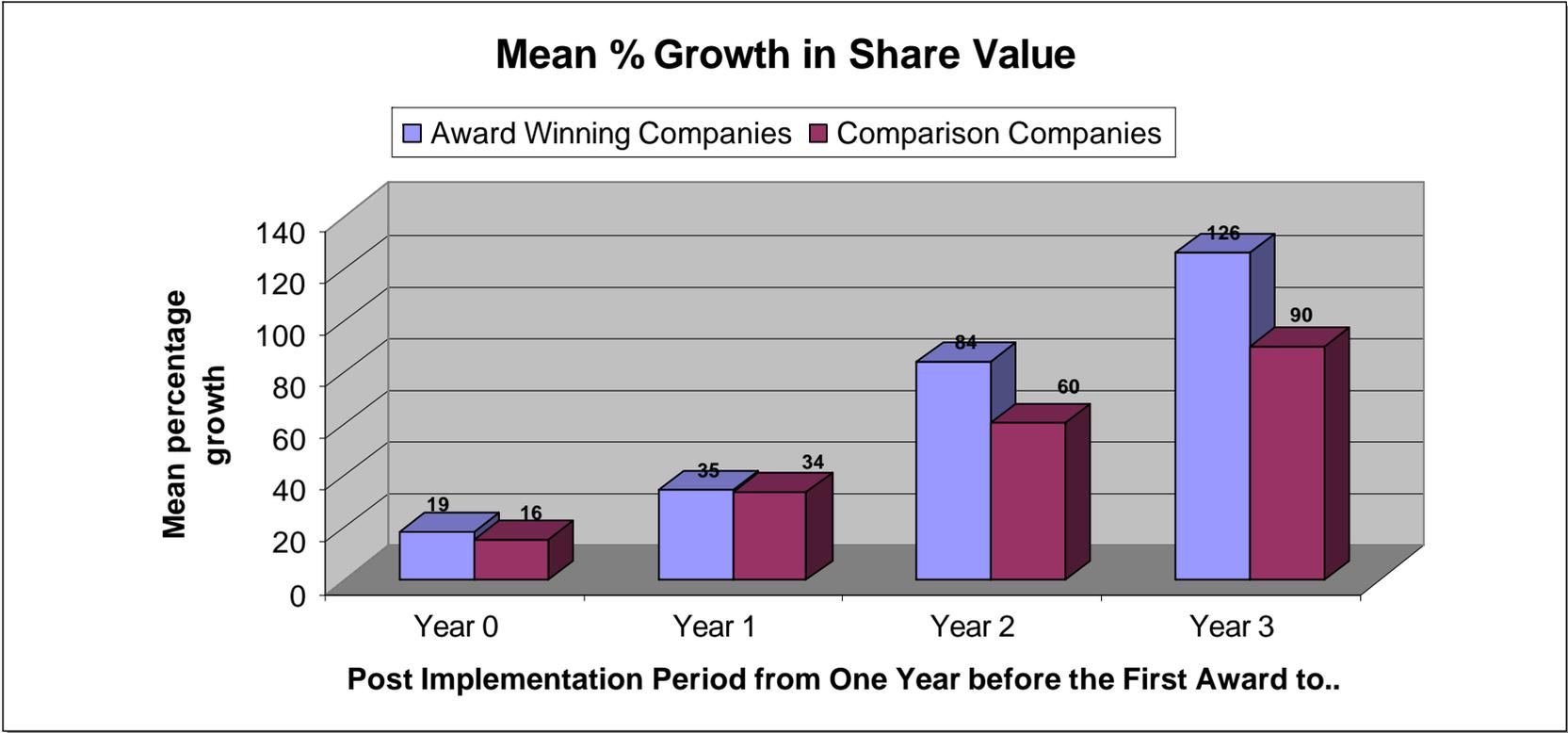


Figure 3: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Share Value.

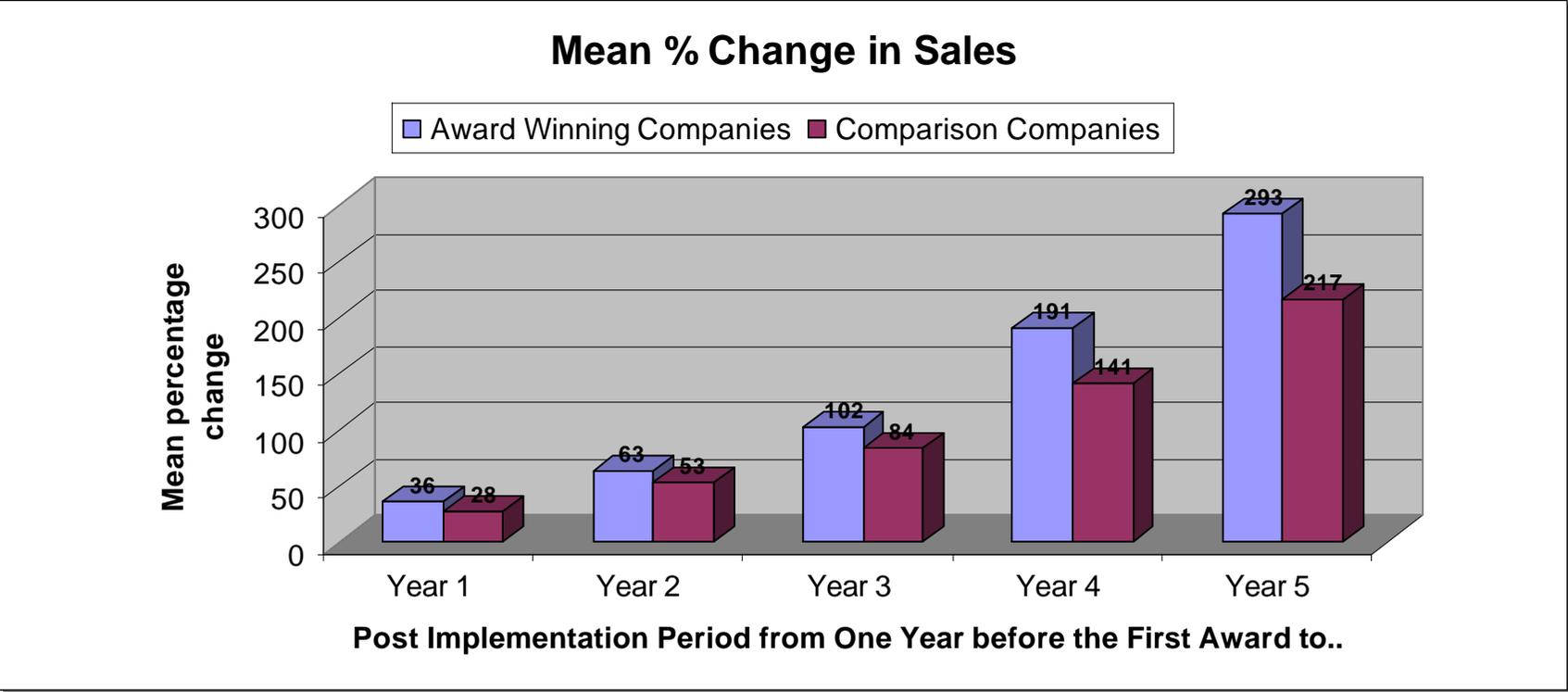


Figure 4: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Sales.

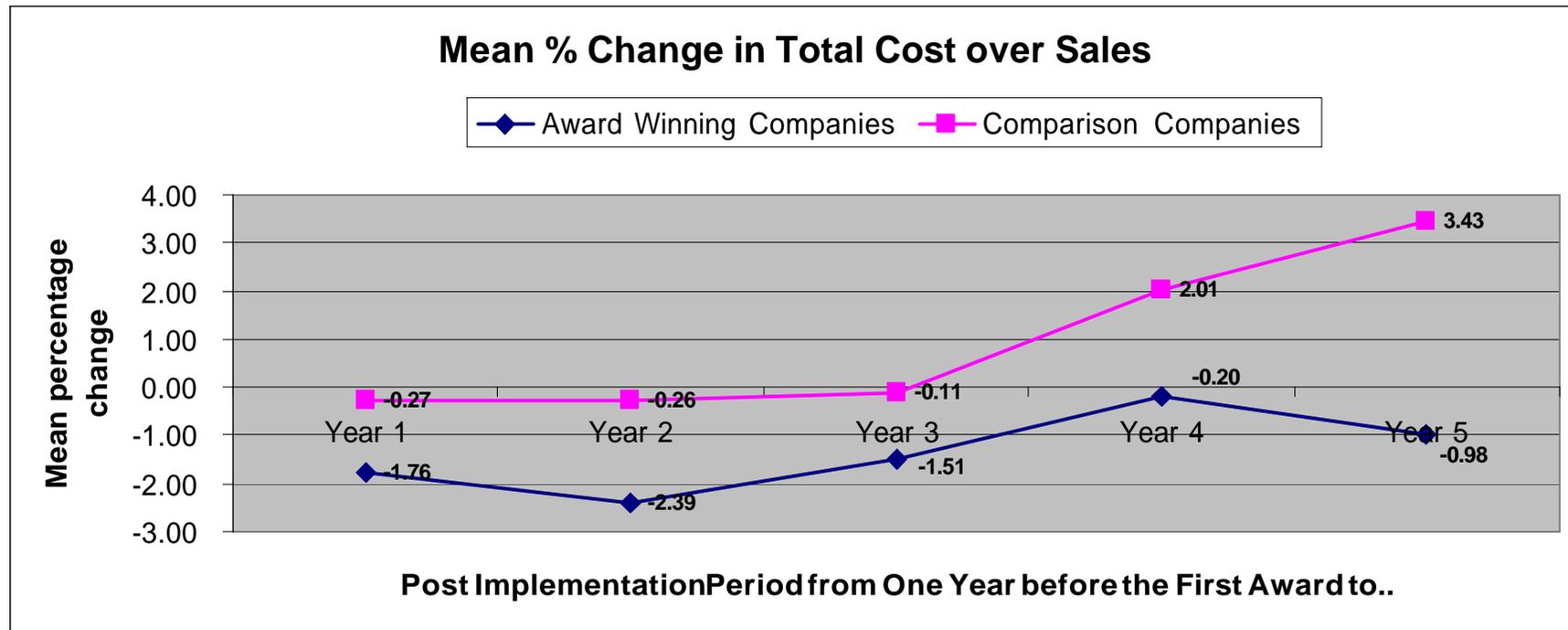


Figure 5: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Total Cost over Sales.

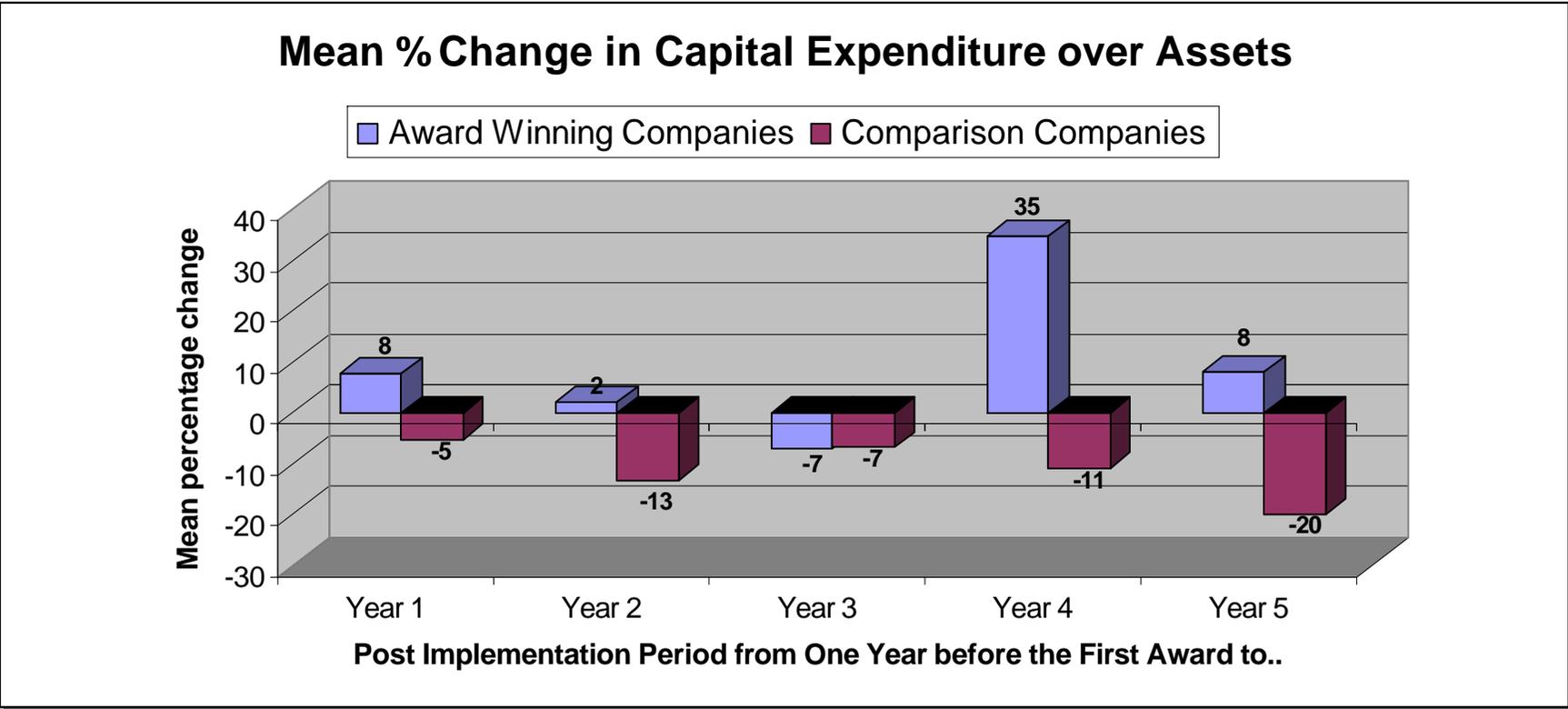


Figure 6: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Capital Expenditure over Assets.

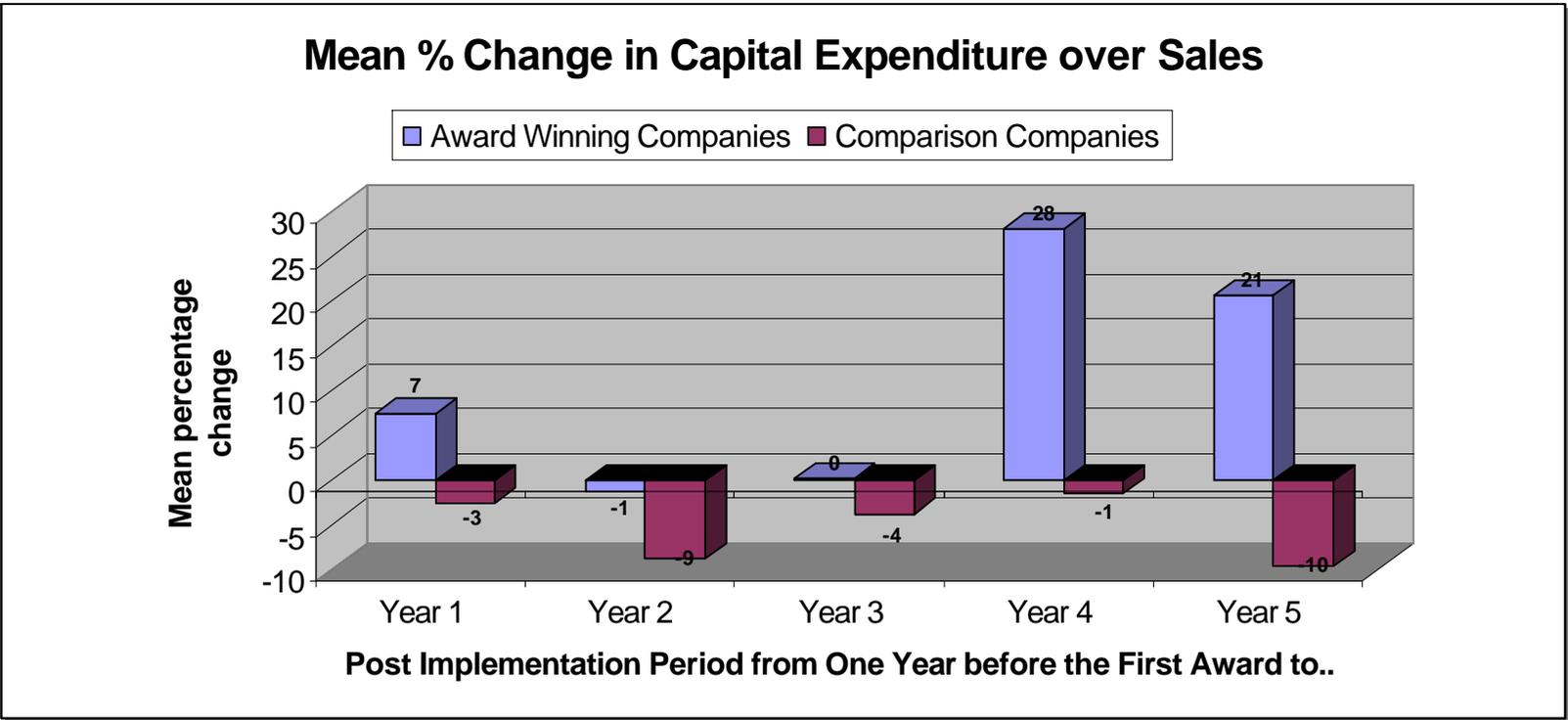


Figure 7: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Capital Expenditure over Sales.

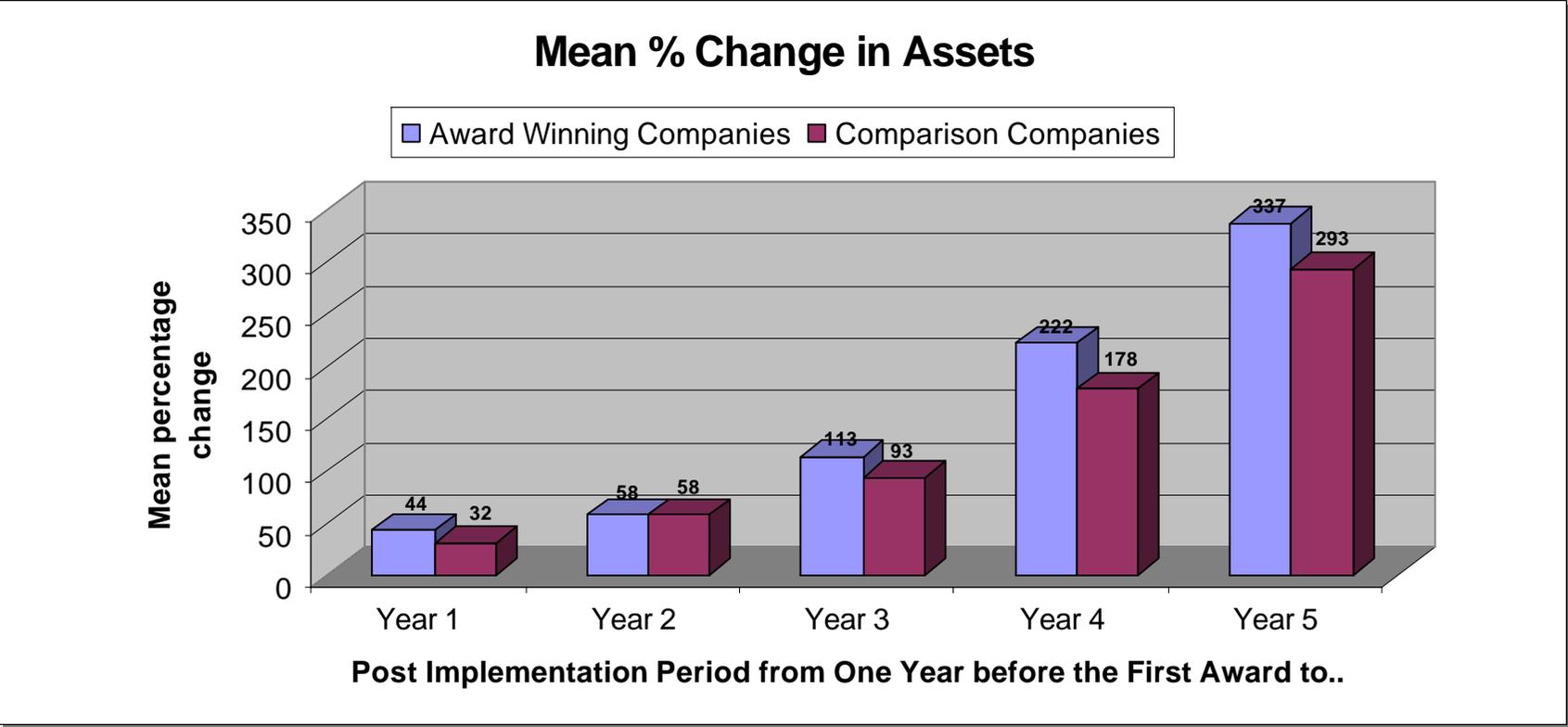


Figure 8: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Assets.

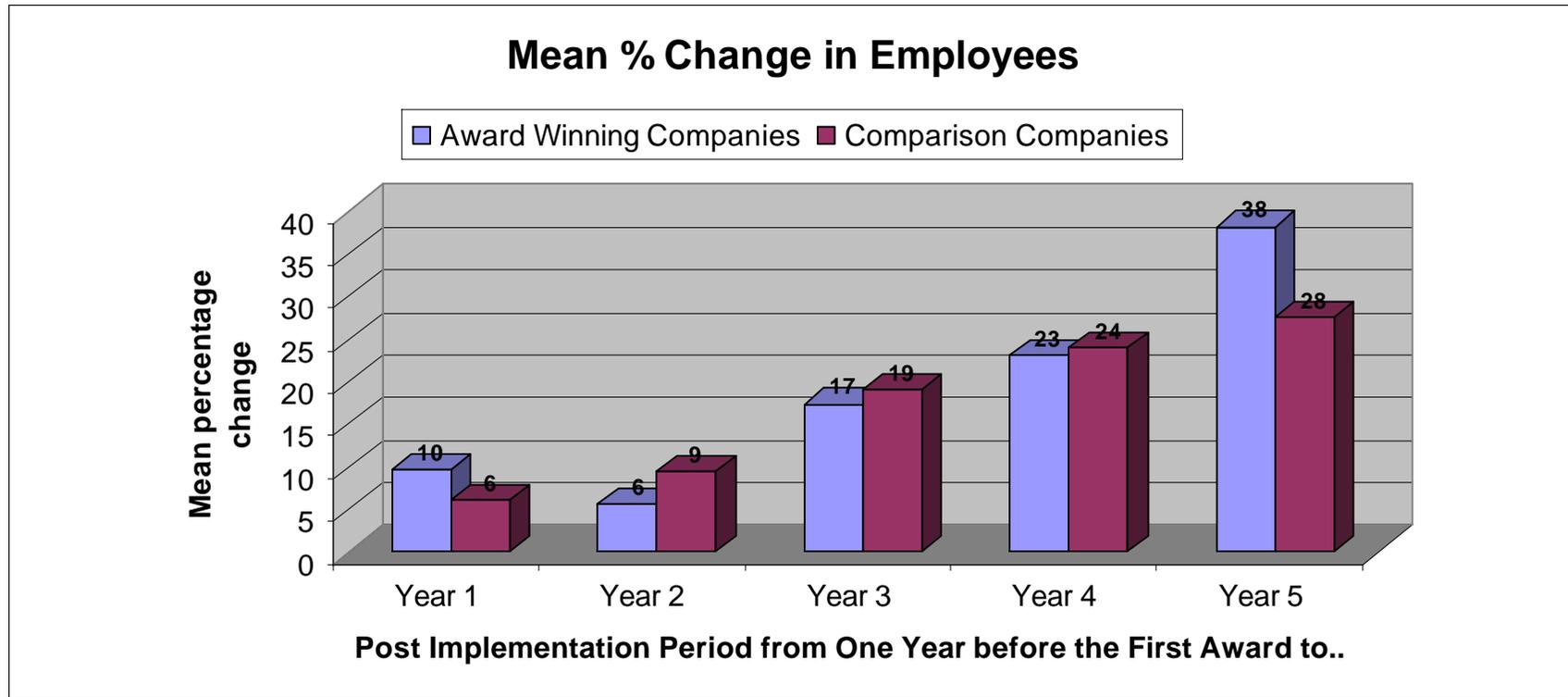


Figure 9: Mean percentage change in the performance of the award winning companies compared to the comparison companies for Employees.