

# Change of Stock Earning Rate on Korean Quality Award Recipients

- The comparison between KQA Index and Baldrige Index -

\* Yung-Ho Suh, \* Hyun-Soo Lee

\* Dept. of Business Administration, Kyunghee University

## Abstract

The purpose of this research is to understand the effects of Quality Management Award on stock prices movement and to examine the comparative advantages of quality award system in Korea and the U.S. This study compares the performances of QM Award companies in the stock market with those of the market index in both countries. We develop Korean Quality Award Index(KQA Index) based on the Baldrige Index of NIST in the U.S. We inspect three studies. Study 1 tests if the performances of MB Award winners and S&P500 index have a difference in the stock market. Study 2 tests if the performances of KQA winners and KOSPI(Korean Composite Stock Price Index) have a difference in the stock market. Study 3 tests if the performances of KQA winners and MB Award winners have a difference in the stock market. From the empirical tests, the performances of KQA winners are superior to those of KOSPI and the performances of MB Award winners are superior to those of S&P500 and the performances of MB Award winners are superior to those of KQA winners.

## 1. Introduction

Mahoney and Thor(1995) said the most important key to success is in the installation of quality management system and the next is quality management system. One of the major contributions of Malcolm Baldrige National Quality Award(MB award)is the making of general management model. As a national award before MB award was established, there is Deming Prize, which was established to pay tribute to the achievements of Deming in Japan, and is still in force. As can be seen

here, quality management system of each country is a standard for executing quality management of companies and is considered as an essential factor in dominant position in competition of 0companies and in consolidating foreign competitiveness of own countries. Also, organizations associated with quality of each country and government are constantly improving and developing themselves through mutual cooperation. In Korea, after quality control was introduced in the 1950s, quality control was defined as the Industrial Standards Act was executed in 1962. From that point, in the early 1990s,

the concept of quality control was changed into quality management in that the whole management organizations should cooperate to execute standardization and integrated quality control is necessary. In the era of *laissez* and globalization, the importance of quality management is now rising in the aspect of survival of companies and consolidation of competitiveness. In 1975, Korean Quality Award was established, which could contribute to radical reform and competitiveness of local companies by improving quality, cost reduction and productiveness and by sharing cases of success. After constant revisions, Korean Quality Grand Award was established in 1994 and is now in force. This study will develop Korean Quality Award Index in the same way as Baldrige Index, which is enforced by NIST of U.S.A every year and will compare the performances of local companies that won the award and those of general companies to see how Korean Quality Award(including Korean Quality Grand Award) changes the performances of companies. In addition, the study aims at measuring the effect of Korean Quality Award and comparing the quality systems of both Korea and U.S.A. This study is meant to confirm the value of development and existence of quality awards that has been pointed out by previous studies, to develop quality awards that fits the situation of both countries and to prepare the basis for

securing international competitiveness.

## 2. Literatures and Case Study

Foreign literatures mainly deal with examination criteria and the effect and criticism of management performances of awarded companies focusing on MB award.

Most studies show that MB award application of quality system results in high financial performances of companies and contribute to building up a fortune of stockholders. There is also a study that shows a negative result such as in the study of Przasnyski & Tai(1999). Local studies are mainly on the evaluation of quality system and methods of quality control, but studies on quality management performance(Noh & Park, 1999; Suh & Lee, 1999; Choi & Chung, 2000) are gradually increasing. Particularly, studies on quality awards are very few because they were mostly focused on the concept and examination criteria(Park & Song; 1998) of quality awards.

The studies on performances of companies that won awards associated with quality are as follows.

Helton(1950) showed investment earning twice more than S&P 500:34% and Dow Jones:41.9% by investing \$1,000 to stocks of MB award winning companies and by earning 99% of return with Baldie play investment strategy that is similar to Baldrige index. Heltons method is different from Baldrige index in that it invested the

same amount of money(\$1,000) to whole companies regardless of the number of employees if their operation divisions won the award. This means that even if the single operation division is awarded, it can lead the quality and bring far-reaching effects on the whole company. NIST has been making imaginary portfolios with MB award winning companies, calculating Baldrige Index and comparing it with S&P 500, the market stock index since 1995<sup>2)</sup>. In 2000, Baldrige index stock study set 24 MB award winning companies and 6 whole companies as objects and analyzed the investment earning of from the first day of stock transaction of the next month of announcing the award to December 1, 1999. The investment earning of the 24 awarded companies showed 841.29%, which is 3.8 times the earning of S&P 500 companies (221.55%). And the investment earning of 6 awarded whole companies showed 1100.727%, which is 4.8 times the earning of S&P 500 companies(227.56%).

Study that drew negative results of awarded companies is by Przasnyski, Tai(1999). It contradicted existing theory through an event study taking MB award winning companies as objects by supplementing the problems of previous studies and through a research on measuring stock investment performances.

The problem of previous studies is in that for measuring stock investment performances,

studies by Helton(1995) and NIST(1999) didn't control industrial factors and markets and evaluated the earning after eliminating risk. This means that for comparative analysis, it is impossible to know whether the actual performance showed by comparing with only market index, not among businesses of the same kind. The objects of the research were whole companies that listed among 28 MB award winning companies from 1988 to 1996 and if their operation divisions were awarded in the same year, the object became only the whole company. Final objects were 17 companies and calculation of annualized returns analysis method based on matched pair analysis was used for measuring stock market performance. The result showed average 31.2% of annual excess earning and 4 out of 17 companies showed plus earning.

To integrate the result of study, long-term stock performance of MB award winning companies was prominent but didn't show superiority in comparison with companies of the same kind. For local study, Suh & Lee(1999) compared the stock earning rate of awards recipients and earning rate of KOSPI during 1 year after award to analyze if stock earning rate of companies that won quality management related awards is higher than that of general companies. The period of comparison was 16 years from 1982 to 1997. From 1982 to 1995, stock earning of award winning companies was higher than

KOSPI except in 1984 and t-test result showed average stock earning rate of award winning companies was 3% higher than that of average KOSPI and statistic analysis result( $t:-2.225$ ,  $p:0.034$ ) turned out to be significant.

### 3. Quality Award System of Korea and U.S.A

As quality award systems, Korea has Quality Award that was established in 1975, hosted by Korean Standard Association and conferred by country in cooperation with Korean National Institute of Technology & Quality and Ministry of Commerce, Industry and Energy. The first foreign quality award system is Deming Prize, which was established in memory of the achievements of W. Edwards Deming in Japan in December 1950. It is conferred upon individuals, companies and public institutions that set good examples of quality control. U.S.A established quality award after being stimulated by Japans successful performances in quality management. The oldest quality award in U.S.A is NASA award, which was established in 1958 and is conferred by NASA(National Aeronautics and Space Administration). However, because NASA award is limited to those companies that are under contract with NASA, MB award is the first national quality award in the aspect of awards

authority and scale<sup>9</sup>.

#### 3.1 Korean Quality Award (Korea Quality Grand Award)

Since Korean Quality Award was established in 1975, the number of awarded companies is 103(excluding department awards) by 1998 and large companies show prevalence(80 large companies and 23 medium and small-sized companies).

However, on the basis of fundamental quality management plan in 1998, the award will reorganize examination criteria for medium and small sized companies, enlarge the objects of the award to public institutions, improve the method of examination so that it can fit the features of each object and newly establish public and service areas.

#### 3.2 Malcolm Baldrige National Quality Award (MB award)

MB award is conferred upon maximum 2 companies for each area among manufacture, medium and small-sized companies and service every year and the areas of health and education were added at the present. By 1999, 18 companies won in the area of manufacture, 10 in service and 10 in medium and small-sized companies. MB is now an object of benchmarking from other countries because national and private

organizations effort for companies improvement of quality and competitiveness and companies adoption of customer-oriented management, strategic quality planning, quality management system and innovation of process are promoting the authority of the award.

#### 4. Method and Data

We develop Korean Quality Award(KQA) Index model based on Baldrige index model by NIST and apply it to this study. Helton(1995)s study made Baldrige portfolio using the same method as in NISTs study, but shows difference in amount of investment for each company. The difference between the studies of NIST and Helton(1995) is in whether total amount is invested in the operation division or proportional amount is invested according to its scale(the number of employees). Whereas NISTs stock study made a proportional investment to operation division according to the number of employees, Helton invested the same amount to both operation division and whole company. In this study, companies whose operation division won the award makes the same amount of investment on the assumption that awarded operation division will extend quality management to the whole organization in that the principles of quality management and previous studies(Helton, 1995; Hendricks & Singhal,

1996; Przasnyski & Tai, 1999) are in gradual improvement, overall involvement and participation.

##### 4.1 Focus of Study

This study is focused on comparing MB award winning companies with S&P 500 companies in U.S.A and comparing Korean Quality Award winning companies in Korea with KOSPI in order to analyze whether the stock prices of quality award winning companies rise after they were awarded. This study has 3 aspects as follows.

Study1: The comparison between MB award winning companies and S&P 500 companies

Study2: The comparison between Korean Quality Award winning companies and KOSPI

Study3: The comparison between Korean Quality Award winning companies and MB award winning companies.

Study 1 is to see whether MB award is a good example for the development of Korean Quality Award by confirming the effect of MB award, which is now being an object of Korean Quality Award. Study 2 is to know whether the stock price of Korean Quality Award winning companies gets higher than that of general companies as time passes by. And it is also to judge the possibility of growth and development of Korean Quality

Award winning companies among general companies in Korea. Study 3 is to know whether Korean companies will be able to survive in a global competition by comparing the competitiveness of Korean companies with that of foreign companies.

#### 4.2 Method of Study

The index model of this study is developed on the basis of Baldrige Index, which is used by NIST of U.S.A. The amount of money that will be invested on the awarded companies in this paper is 1 Million Won and the measurement of the changing invested amount is based on closing price of stock markets deadline. In addition, in case the stocks of the awarded companies are not listed in the awarding year, the first date of listing was set as a standard. The changing invested amount of Korean companies was compared with KOSPI which is now in force. The same amount as the total investment was invested on KOSPI. Four principles as follows has been established to Korean Quality Award(KQA) index that is proper for the purpose of this study, to supplement the problems of previous studies, and to fit Korean situation.

**[Principle 1]** The evaluation of companys performance is conducted one year after the award.(If the investment year and award year differs, it is exceptional)

**[Principle 2]** If a company won the award more than two times

- 1) If the award year is different : invest every award year
- 2) If the award year is the same : invest in proportion to the number of award winning companies.

**[Principle 3]** If the company is not listed at the time of award : invest setting the first date of listing as a standard.

**[Principle 4]** If the company was merged or sold : invest with the stocks of the present company.(If the company name was retained, continue the existing investment.)

- 1) If the company was not listed before merger : set the first transaction date after merger as investment date.
- 2) If the company was listed before merger : invest on the stocks of the award date and reinvest on the whole company at the same time as merger.

#### 4.3 Collection of Data

The objects of this study are the companies that won Korean Quality Award and MB award from 1988 to 1998 in both U.S.A and Korea. However, this study reselected the listed companies among the object companies in that it measures the performances in stock market. For the award winning companies in both U.S.A and

Korea, 44 Korean companies and 35 American companies were selected as can be seen in Table 1. After reselection, the final objects are 26 Korean companies and 24 American companies as can be seen in Table 2.

For Korean companies, stock exchange market newspaper was used, and for MB award winning companies, the analysis data

in NISTs homepage([http://www.nist.gov/public\\_affairs/releases/stock.htm](http://www.nist.gov/public_affairs/releases/stock.htm)) as resources. To go deeper into the awarded companies in the U.S.A, Solectron twice in 1992 and 1997, and AT&T won twice in 1992 and one of its operation division won once in 1994, which means two companies were awarded twice. In Korea, there was no

Table 1 Award Recipients

Year	MB Award		KQA(Grand Award)	
	Whole Company Recipient	Subsidiary Recipient	Whole Company Recipient	Subsidiary Recipient
1988	Motorola, Globe Metallurgical	Westinghouse	KyungNam Wool Textile, Kia Precision Works, LGIS	
1989	Milliken	Xerox	Daewoo Elec., Hnanam	
1990	FedEx, Wallace	IBM Rochester, Cadillac Motor	Doosan Machinery, Asia Motors, Rocket boiler	
1991	Solectron, Zytec, Marlow Industries		Kia Motors, Ace Bed Co., Namyang Corp., Han Mi	
1992	Ritz-Carlton Hotel, Granite Rock	Texas Instruments, AT&T-UCS, AT&T-TSBU	Keyang Electric Machinery, Kia Service	
1993	Eastman Chemical, Ames Rubber		HanJung, KwangJin	
1994	GTE, Wainwright	AT&T-CCS	Wooyoung, Westin Chosun, (Samsung Electronics)	
1995		Corning, Armstrong	LG-EDS, Incheon Iron & Steel Co., Pyunghwa Ind., Unison Ind., (SsangYong Cement Ind.)	
1996	ADAC, Dana Commercial, Trident, Custom Research		OGS, Dajin Bed CO., Hanhwa L&C Corp., Daewoo Motor, Kumho Construction, Woobang Co., TongYang Magic	(Daewoo Heavy Ind.)
1997	Solectron, Merrill Lynch	3M, Xerox	Kumwon, Hanil E-Hwa, HDEC, LG MMA, KOLAND, (SamSung SDI)	(Hyundai Heavy Ind.), Daewoo Corp.
1998	Solar Turbines, Texas Nameplate	Boeing Airlift and Tanker Programs	KyungDong Boiler	Samsung Techwin, Hyundai Dep., (saehan)
Sub-total	22	13	38	6
Total	35		44	

Table 2 final analysis samples

Year	MB Award		KQA(Grand Award)	
	Whole Company	Subsidiary Recipient	Whole Company	Subsidiary Recipient
1988	1		3	
1989		1	1	
1990	1	2	2	
1991	2		2	
1992	1	3	1	
1993	1		0	
1994		2	1	
1995		2	3	
1996	1	1	3	1
1997	1	3	3	2
1998	1	1	1	3
Sub-total	9	15	20	6
Total	24		26	

Table 3 MB Award recipients performances(Baldrige Index)

Date of received	Date of Investment	Company	Stock Purchases		Close(1999/12/1)		Returns (%)
			Price	Invested	Price	Value	
88/11	88/12/1	Motorola	38.125	1000.00	116.9375	12268.85	1126.89
89/10	89/11/2	Xerox	57.875	790.00	26.5	2170.37	174.73
90/10	90/11/1	Cadillac Motor	36.875	13.39	72.4375	26.30	96.44
90/10	90/11/1	FedEx	33.375	1000.00	41.375	4958.80	395.88
90/10	90/11/1	IBM Rochester	107.25	17.62	103.75	68.18	286.95
91/10	91/11/1	Solectron	28.25	1000.00	86.75	49132.74	4813.27
92/10	92/11/2	AT&T UCS	44.125	37.54	77.25	384.62	924.55
92/10	92/11/2	AT&T TSBU	44.125	37.54	77.25	384.62	924.55
92/10	92/11/2	TI	49.375	246.61	30.4375	542.47	119.97
91/10	93/11/11	Zytec(Artesyn)	10.5	1000.00	21.625	7349.81	634.98
93/10	94/1/3	Eastman Chemical	45.125	1000.00	38.8125	860.11	-13.99
94/10	94/11/1	AT&T CCS	54.5	159.26	54.8125	308.62	93.79
94/10	94/11/1	GTE	30.5	41.88	74.25	101.95	143.44
95/10	95/11/1	Armstrong	58.875	118.25	33.125	66.53	-43.74
95/10	95/11/1	Corning	25.75	36.41	96.75	159.91	339.19
96/10	96/11/1	ADAC	20.875	1000.00	12.06	577.84	-42.22
96/10	96/11/1	DANA	29.875	11.27	28	10.56	-6.28
97/10	97/11/3	3M	92.1875	9.90	94.4375	10.14	2.44
97/10	97/11/3	Merrill Lynch	69.75	16.51	79.875	18.90	14.52
97/10	97/11/3	Solectron	40.875	1000.00	86.75	4244.65	324.46
97/10	97/11/3	Xerox	79.875	149.54	26.5	99.23	-33.65
93/10	98/3/30	Ritz-Carlton	35.94	96.53	33.125	88.97	-7.83
98/11	98/12/1	Boeing	40.375	36.91	41.32	37.78	2.34
98/11	98/12/1	Solar Turbines	51.94	95.16	46.9375	86.00	-9.63
Total				8883.31		83617.73	841.29



Table 4 Baldrige Index annual returns

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Returns(%)	1126.89	174.73	259.76	4813.27	656.36	634.98	74.41	147.73	-24.25	76.94	-5.04
count	1	1	3	1	3	1	3	2	2	4	3

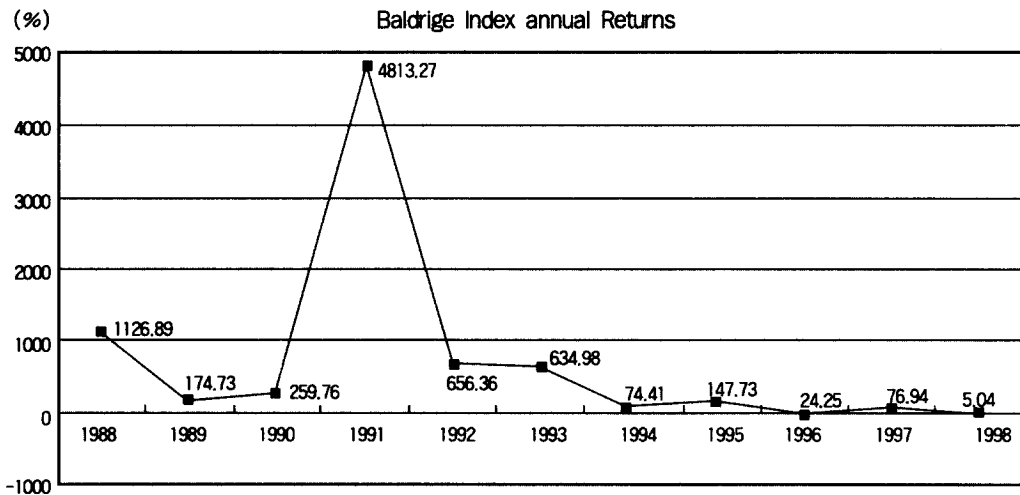


Fig. 1 Baldrige Index annual returns

company whose operation division won any award by 1995, but from 1996 the examination criteria had been consolidated to see that some division operation of large companies won the award.

## 5. Result of Study

This study deduced the result by statistically analyzing from three aspects such as comparison between MB award winning companies and S&P 500 companies, comparison between Korean Quality Award(KQA) winning companies and KOSPI and comparison between KQA company and MB award winning company.

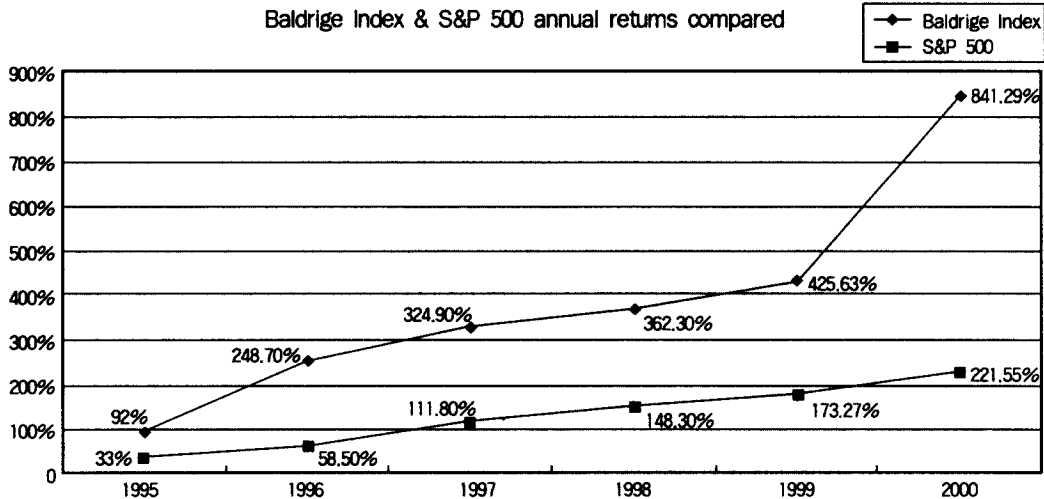
Because the analysis periods are 6 years, a short period, the statistical analysis operates Mann-whitney test, non parametric statistics.

### 5.1 Result of Study 1

In study 1, Baldrige Index, which analyzes the performances of MB award winning companies, was analyzed and it was compared with S&P 500 companies. As can be seen in Table 4, analysis of Baldrige Index for each investment year shows that the performances of the companies that invested before 1993 was prominent. And this means that the companies are observing continuous

**Table 5** Baldrige Index & S&P500 annual returns compared

Year	1995	1996	1997	1998	1999	2000
Baldrige Index	92%	248.7%	324.9%	362.3%	425.63%	841.29%
S&P500	33%	58.5%	111.8%	148.3%	173.27%	221.55%
outperform(times)	3	4	3	2.4	2.5	3.8



**Fig. 2** Baldrige Index & S & P500 annual returns compared

improvement, which is a fundamental policy of quality management.

The comparison with S&P 500 Index has been showing two to four times of continuous prominent performances since 1995. The statistical analysis is significant(MWU:4, p:0.025), which proves that companies with quality management is more effective than general companies in building up fortunes of stockholders.

### 5.2 Result of Study 2

In study 2, KQA Index, which analyzed the performances of Korean Quality Award

winning companies, was analyzed and it was compared with KOSPI. To see the result of analyzing KQA Index as in Table 5, KQA Index showed that the performances of companies were prominent before 1993. However, seeing that the result was made out of rapid growth of a few companies in an early period, the result can be interpreted as being leveled off. In addition, 11 companies (1/3) showed (-) growth, which means that Korean companies didn't carry out quality management activities constantly after winning the quality award.

To see the comparison with KOSPI, most

companies exceeded KOSPI and showed better performances than general companies except in 1996 and 1998, although the performances did not reach Baldrige Index and statistical result(MWU:11, p:0.262) isn't significant. but, In long term viewpoint, this means that companies with quality management are in a better position than general companies in building up the fortune of stockholders.

### 5.3 Result of Study 3

In study 3, the companies value change of KQA winning companies and MB award winning companies was compared. In Table 6, only by using technical statistics in overall stock price and performances, the differences can be seen. Also, the statistics analysis result(MWU:1, p:0.006) is significant.

As in Table 3 and Table 6, whereas 7 MB award winning companies showed (-) growth

Table 6 KQA Recipient performances(KQA Index)

Date of received	Date of Investment	Company	Stock Purchases		Close(1999/12/28)		Returns (%)
			Price	Invested	Price	Value	
88/11	88/12/1	KyungNam Wool Textile	26,400	1,000,000	950	98,608.84	-90.14
88/11	88/12/1	LGIS	24,000	1,000,000	4,100	315,409.85	-68.46
88/11	89/5/30	Kia Precision Works	21,000	1,000,000	1,895	441,681.74	-55.83
89/11	89/12/1	Daewoo Elecs	23,700	1,000,000	770	76,804.20	-92.32
90/11	90/12/1	Doosan Machinery	26,500	1,000,000	29,350	11,435,278.47	1043.53
90/11	90/12/1	Asia Motors	18,000	1,000,000	7,100	14,772,504.90	1377.25
91/11	91/12/2	Kia Motors	21,800	1,000,000	7,100	3,029,536.98	202.95
91/11	91/12/2	Namyang Corp.	9,410	1,000,000	1,005	95,145.52	-90.49
92/11	92/12/1	Keyang Electric	22,500	1,000,000	2,150	1,876,572.96	87.66
94/11	94/12/1	Samsung Elec.	123,400	1,000,000	266,000	6,496,387.19	549.64
95/11	95/12/1	SsangYong Cement	21,600	1,000,000	2,900	368,117.95	-63.19
95/11	95/12/1	Inchon Iron&Steel	30,000	1,000,000	6,050	1,466,666.67	46.67
95/11	95/12/1	Pyunghwa Ind.	21,300	1,000,000	2,120	1,424,807.44	42.48
96/11	96/12/2	DaewooHeavy Ind.	5,730	1,000,000	850	148,362.02	-85.16
96/11	96/12/2	Hanhwa L&C	8,300	1,000,000	9,990	2,366,521.82	136.65
96/11	96/12/2	Daewoo Motor	12,300	1,000,000	3,050	2,792,495.31	179.25
96/11	97/2/12	Woobang	13,900	1,000,000	4,150	404,555.55	-59.54
97/11	97/12/1	Samsung SDI	35,200	1,000,000	47,200	2,295,873.53	129.59
97/11	97/12/1	Hanil E-Hwa	12,500	1,000,000	9,500	10,202,734.00	920.27
97/11	97/12/1	Daewoo Corp.	3,690	1,000,000	490	163,244.19	-83.68
97/11	97/12/1	HDEC	8,590	1,000,000	5,500	2,808,463.65	180.85
98/11	98/12/1	Saehan	5,470	1,000,000	7,750	1,416,819.01	41.68
98/11	98/12/1	Samsung Techwin	4,730	1,000,000	10,800	6,006,830.38	500.68
98/11	98/12/1	KyungDong Boiler	12,300	1,000,000	12,200	991,869.92	-0.81
98/11	98/12/1	Hyundai Dep.	8,880	1,000,000	13,500	1,588,595.94	58.86
97/11	99/8/24	HyundaiHeavy Ind.	69,000	1,000,000	43,000	623,188.41	-37.68
Total				26,000,000		73,707,076.44	183.49

Table 7 KQA Index annual returns

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Returns(%)	-79.3	-74.08	1210.39	56.23	87.66		549.64	8.65	76.91	217.50	150.10	-37.68
count	2	2	2	2	1	0	1	3	3	5	4	1

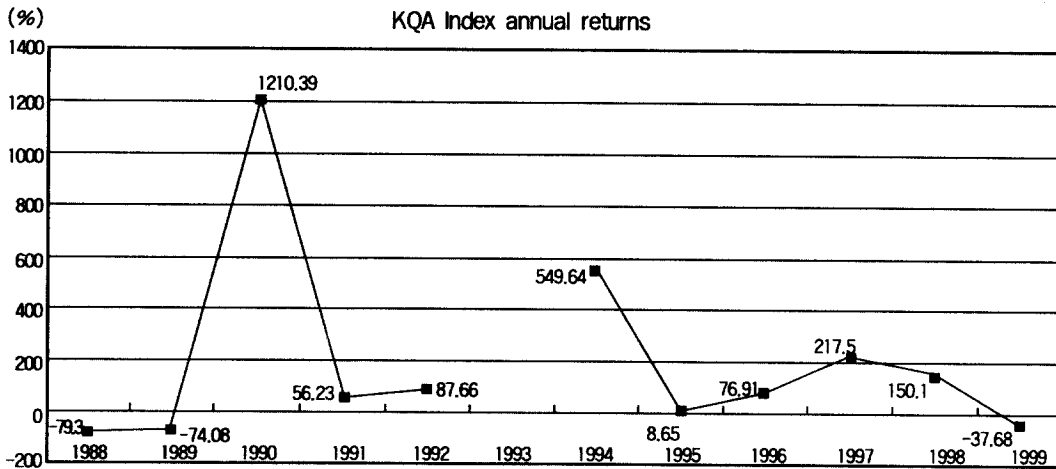


Fig. 3 KQA Index annual returns

after 1993, 11 Korean companies showed even distribution with (-) growth. And this suggests that Korean companies did not constantly perform quality management activities. The common point of the two groups is that quality management index showed falling curve after 1996. However, considering that Korea was in a financial crisis, IMF from 1996 to 1998 and KOSPI also fell, both two groups show rising curve as in Table 5, two groups are proper investment portfolios for building up the fortune of stockholders.

## 6. Conclusion and Limitations of Study

This study is to develop Korean Quality Award(KQA) Index in the same way as Baldrige Index, which is conducted in NIST in U.S.A every year and to see its effect. The analysis of the effect compares both countries quality systems and checks the performances of awarded companies by comparing MB award winning companies (Baldrige Index) with S&P 500 companies, Korean Quality Award winning companies (KQA Index) with general companies (KOSPI), and KQA winning companies with MB award winning companies.

The model for this study is developed on the basis of Baldrige Index developed by NIST and as applied to the study. Study 1

Table 8 KQA Index &amp; KOSPI returns compared

Year	1995	1996	1997	1998	1999	2000
KQA Index	68.75%	34.96%	25.61%	-24.61%	20.84%	183.49%
KOSPI	37.11%	14.33%	-19.13%	-52.34%	-14.71%	65.62%
outperform(times)	1.9	2.4	-	-	-	2.8

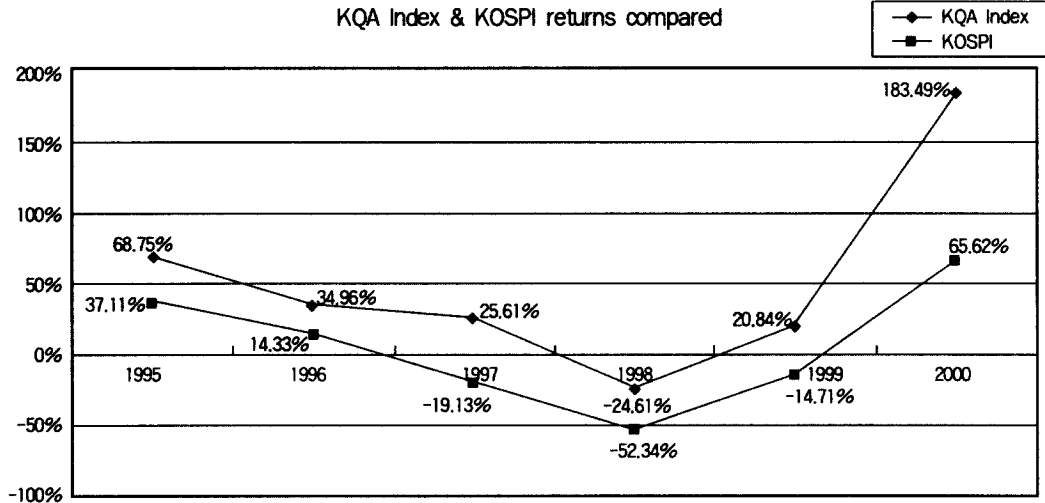


Fig. 4 KQA Index &amp; KOSPI returns compared

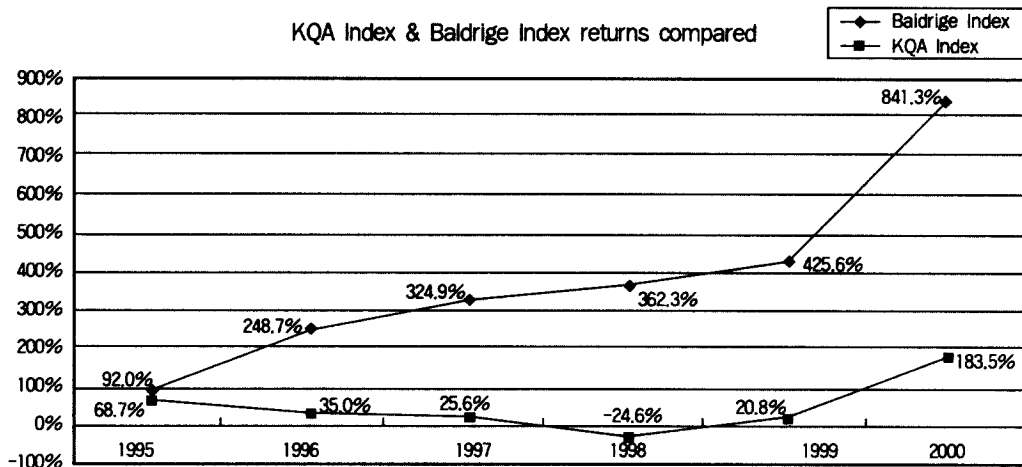
analyzed the performances of MB award winning companies and is divided into analysis of Baldrige Index and its comparison with S&P 500 companies. The analysis of Baldrige Index for each investment year shows that the performances of the companies that invested before 1993 was prominent, which means the investment was proper from long-term point of view of investment. The comparison with S&P 500 Index has been showing two to four times of continuous prominent performances since 1995, which proves that companies with quality management is effective in building up fortunes of

stockholders.

In study 2, KQA Index, which analyzed the performances of KQA winning companies, was analyzed and it was compared with KOSPI. KQA Index showed that whereas most companies showed (+) growth, 11 companies(1/3) showed (-) growth, which means that Korean companies didnt carry out quality management activities constantly after winning the Korean Quality Award. To see the comparison with KOSPI, most companies exceeded KOSPI and showed better performances than general companies, which is in an advantageous position to build up the fortune of

**Table 9** KQA Index & Baldrige Index returns compared

Year	1995	1996	1997	1998	1999	2000
KQA Index	68.75%	34.96%	25.61%	-24.61%	20.84%	183.49%
Baldrige Index	92%	248.7%	324.9%	362.3%	425.63%	841.29%



**Fig. 5** KQA Index & Baldrige Index return compared

stockholders. In study 3, the companies value change of KQA winning companies and MB award winning companies were compared. And the result suggests that Korean companies did not constantly perform quality management activities. However, considering that Korea was in a financial crisis, IMF from 1996 to 1998 and KOSPI also fell, two groups are proper investment portfolios for building up the fortune of stockholders.

In conclusion, Korean Quality Award winning companies can be seen as a proper portfolio for increasing the fortune of stockholders in that they show superior performances compared with general companies. However, they cannot be a

footing for stable investment due to severe fluctuation in national crisis. Therefore, the manager of the companies should realize that constant improvement, which is the fundamental of quality management, should be done to get out of crisis and continuously perform quality management activities.

For the limitations of this study, firstly, it could not measure the performances of the whole award winning companies in that it covered only listed companies focusing on index development. Secondly, systematic and unsystematic risk was not reflected as was pointed out by the study of Przasnyski, Tai(1999). Lastly, proper analysis result of each industry could not be drawn due to the small number of award winning companies.

As a future study, more detailed analysis that compares with the industry of the same kind, which supplements the problems of previous studies, and that additionally analyzes crisis will be required.

## Reference

1. Kim, et al.(1999), *Quality Management*, Parkyoungsa.
2. Rho, boo-ho & Park, Young-su(1999), "A Study on the Impact of Strategic Quality Management and Business Performance in Korea," *Journal of the Korean Society for Quality Management*, Vol. 27, No.1, pp. 1-17.
3. Park, Young-taek & Song, Hae-guen(1998), "Criteria for Quality Award and Measurement of Management Quality," *Journal of the Korean Society for Quality Management*, Vol. 26, No. 2, pp. 82-92.
4. Suh, Yung-Ho & Lee, Hyun-Soo(1999), "A Study on the Financial Performance of Korean Quality Award Firms in the Stock Market," *Journal of the Korean Society for Quality Management*, Vol. 27, No. 3, pp. 51-66.
5. Mahoney, F. X. & Thor, C. G.(1995), *THE TQM TRILOGY*, Gimmyoung Co., pp. 12.
6. Choi, Sung-yong & Jung, Hae Kyung(2000), "Effect of Ownership Types, Geographical Locations and Leadership types of Medical Service Institutions on TQM Performance," *Journal of the Korean Society for Quality Management*, Vol. 28, No. 1, pp. 151-174.
7. Hart, Christopher W. L.(1993), "What's Wrong- And Right-With The Baldrige Awards," *Chief Executive*, November/December, pp. 36-47.
8. Helton, B. Ray(1995), "The Baldie play," *Quality progress*, Vol. 28, Issue. 2, pp. 43-45.
9. Hendricks, K. B. & Singhal, V. R.(1996), "Quality Awards and the Market Value of the firm: An empirical investigation," *Management Science*, Vol. 42, No. 3, pp. 415-436.
10. Przasnyski, Zbigniew H. & Tai, Lawrence S.(1999), "Stock market reaction to Malcolm Baldrige National Quality Award announcements: does quality pay?," *Total Quality Management*, Vol. 10, No. 3, pp. 391-400.
11. Ramasesh, R. V.(1998), "Baldrige award announcement and shareholder wealth," *International Journal of Quality Science*, Vol. 3, No. 2, pp. 114-125.
12. Wisner, J. D. & Eakins, S. G.(1994), "A Performance Assessment of the US Baldrige Quality Award Winners," *International Journal of Quality & Reliability Management*, Vol. 11, No. 2, pp. 8-25.
13. NIST(2000), "Baldrige Index Stock Study," [http://www.nist.gov/public\\_affairs/releases/stock.htm](http://www.nist.gov/public_affairs/releases/stock.htm)