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The Effect of QM Activities on the Management Results of Small and Medium sized Enterprises in South Korea

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품질경영활동이 중소기업 경영성과에 미치는 영향

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In this study, a correlation between execution of quality management activities and their results was verified by applying the Malcolm Baldrige model (hereafter referred to as the MB model) as a quality management performance measurement indicator for small and medium enterprises (SMEs) in South Korea. To achieve this goal, we need to determine whether the categorical requirements in the MB model are recognized consistently in SMEs, as a prerequisite. To this end, factor analysis was conducted for measurement variables in each category, which revealed that the process indicator was made up of six factors and the outcome indicator was made up of five factors, like those configured in the MB model. This result can be interpreted to mean that the requirements in each category of the MB model were well produced and recognized consistently throughout SMEs in South Korea. In addition, the analysis of causality between the process indicator (quality management activities) and the outcome indicator (management results) showed high causality between them. Although the quality management levels of SMEs in South Korea are inferior to those of conglomerates or other national quality award-winning companies, this study is significant in that the causality between quality management activities and results was verified, since this study targeted SMEs in South Korea as the target of investigation. Thus, it is empirically proven that the MB model can contribute to improved management results for SMEs in Korea.

Keywords : Quality Information System, CTQ, CTP, AHP, Indicative Planning, Contingency Approach

1. Introduction

Most companies around the world now regard quality as an important means to secure competiveness as they respond to changes in enterprise environments. This also applies to a large number of companies in South Korea [23]. Quality competitiveness is considered the most important element of competiveness regardless of the elements that need to be achieved [38].

Currently, companies do not limit their views on quality only to the manufacturing area but also extend them comprehensively to include all areas and steps of management to promote and secure competiveness. That is, quality management has been proposed as a set of comprehensive and in-

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tegrated practice measures to secure the competitiveness of companies. The Malcolm Baldrige National Quality Award (MBNQA) in the United States is a representative model of such activities.

In this study, a correlation between execution of quality management activities and management results was verified by applying the Malcolm Baldrige model (hereafter referred to as the MB model) as a quality management performance measure for small and medium enterprises (SMEs) in Korea, something that has not been studied sufficiently to date. To achieve this goal, it is necessary to determine, as a prerequisite, whether the categorical requirements in the MB model are recognized consistently in South Korean SMEs. If they are verified to be consistent, the verification of causality between quality management activities and management results using the MB model will be significant.

2. Theoretical Discussion

2.1 Core Quality Management Activities

Although definitions of quality management vary among scholars [11, 17, 19, 30], a common definition emerges as follows : quality management is a total and comprehensive management system that pursues the long-term success of companies by strengthening their competiveness through the creation of enterprise cultures that participate in continuous innovation and improvements through the collective means of all employees under the leadership of the chief executive officer, focusing on securing competitive advantages through quality and concentrating on customer satisfaction, respect of humanity (promotion of employee benefits), and social contribution [28].

Quality management is a comprehensive concept that promotes continuous improvement in organizations. It emphasizes systematic, integrated, and consistent viewpoints from the overall view of the organization. It also focuses on the satisfaction of stakeholders, including internal and external customers, within management environments that pursue continuous progress of all systems and processes.

A variety of proposals have been suggested regarding core quality management activities [2, 3, 6, 12, 14, 26, 31, 36]. In the MB model, core areas of quality management are divided into seven categories : leadership; strategic planning; customer focus; measurement, analysis, and knowledge management; workforce focus; operations focus; and results. Accordingly, the main items mentioned in the MB model largely accommodate the important issues raised in previous studies.

2.2 Quality Management Performance Measurement

Quality management performance measurement has been spotlighted as companies have introduced and executed quality management as a measure of management innovation and a means to achieve customer satisfaction.

Quality management performance measurement is defined as a measurement of the effects (performance) of quality management.

Although a number of approaches to quality management performance measurement have been proposed [4, 5, 14, 31], no standardized performance measurement model is commonly accepted. This is because driving strategies and related activities for quality management involves comprehensive and flexible characteristics, and thus it is difficult for a performance measurement model to be specified in a standardized form. Nonetheless, in many cases of quality management performance measurement, the effects of quality management are assessed in an integrated manner, and thus performance measurement is becoming generalized as a performance measurement model type in the broad sense that assesses the “overall activities” related to quality management and the “results.” Many national quality awards in different nations, including the MB award, are representative models of such a performance measurement type [33].

In this study, quality management performance measurement is discussed mainly in terms of the MB model, which is widely accepted worldwide.

2.3 MB Model

The MBNQA was established according to the Malcolm Baldrige National Quality Improvement Act (Public Law 100-107), which was authorized by Ronald Reagan, President of the United States, on August 20, 1987. At the time, the United States was in its worst economic circumstances since the Second World War, in contrast with Japan, which was experiencing an economic heyday owing to its economic and product competitiveness. Although A.V. Feigenbaum had proposed the concept of total quality control (TQC) at the end of 1950s, the United States, in which modern quality

control was born for the first time, did not respond to TQC favorably. However, Japan adopted TQC fervently and became one of the world's quality superpower nations. Japan's efforts contributed to Japanese companies' becoming competitive worldwide in the 1980s. Later, leaders in academia and industry in the United States realized that quality was the source of Japan's strong competiveness, and benchmarked the Deming Prize in Japan to establish the MB award [8].

Although the MB award winner is chosen based on assessment criteria that became a foundation for composing feedback reports, the ultimate objectives of the award are to help raise companies' performance and execution capabilities and share best management practices for all types of organization, thereby increasing national competitiveness. The assessment criteria of the MB model have been revised many times and finally grouped into seven categories : leadership; strategic planning; customer focus; measurement, analysis, and knowledge management; workforce focus; operations focus; and results.

2.4 Need for Quality Management Activities in SMEs

In every country, SMEs[1] account for a large proportion of the national economy and are a driving force of balanced economy development. Accordingly, the importance of the role of SMEs has been emphasized. This is why this study is focused on SMEs. As of 2009, SMEs accounted for 99.9% of business in all industries in South Korea, and 87.7% of all employees worked at SMEs. In the manufacturing industry, the numbers are 99.5% and 76.8% respectively, and, thus, SMEs are fundamentally important to the manufacturing industry in South Korea. However, SMEs represent only 47.5% of output value and 50.5% of added value, or only around half the output value and added value of the entire manufacturing industry. The value added productivity per capita for SMEs compared to that of large conglomerates shows a declining trend, from 35.4% in 2000 to 30.7% in 2009, and the gap between annual salary per capita at SMEs and at large conglomerates has widened further, with SME salaries being 55.5% of large conglomerate salaries in 2000 and only 50.1% in 2009. This record shows that SME competiveness compared to large conglomerates has continued to deteriorate [22]. There are a number of reasons for the lower competiveness of SMEs in South Korea, such as a lack of management resources in many areas, but one of the biggest reasons is that SMEs have not been well prepared for quality management activities. Although field-oriented quality management activities have been somewhat conducive to improving industrial conditions in South Korea in many ways, it is evident that such activities alone cannot guarantee competiveness in this era of unlimited competition. Thus, it is necessary for SMEs in South Korea to drive quality management activities strategically and systematically to secure a competitive edge.

1) The scope of SMEs is pursuant to Section 1 in Article 2 of the Small and Medium Enterprise Act and Section 1 in Article 3 of the Enforcement Decree of the same Act.

2.5 Previous Studies on Quality Management and Management Performance

As the execution of quality management has been applied as a practice to secure the long-term competitiveness of companies, empirical studies on the relationship between the effective execution of quality management and its results have been conducted continuously.

For example, previous studies on the relationship between winning a quality award and management results showed that companies that were awarded quality prizes were mostly better in terms of management results than companies without quality awards [13, 15, 16, 23, 35]. On the other hand, study results showing that winning quality awards did not affect management performance positively can also be found. For example, Wallace Corporation went bankrupt after winning the MB award, and GM, IBM, Kodak, and Westinghouse were worse in terms of overall performance after winning the MB award [10].

Previous studies on the relationship between quality management execution and results showed that companies that had relatively high quality management execution had better results [1, 9, 21, 27, 32].

In a previous study on SME quality management performance, Tomkovich [37] reported that since SMEs had more diverse elements affecting quality management performance than those required by quality awards in general, it was necessary to apply additional assessment criteria for SMEs to assess them comprehensively.

Husband and Mandal [18] expressed that the standards of existing quality awards or quality systems were based on basic aspects, including only a few core criteria for funda-

mental sustainability and integrated resources, and placed less emphasis on structural and external dimensions.

Yusof and Aspinwall [39] proposed that a framework for TQM practices in SMEs should meet the following conditions : systematic and easy to understand, simple structures, a clarified solution between suggested elements, generality for application to various practice environments, a detailed road map, planning tools, a focus on "how" rather than "what," and practicability.

Stephens [34] disclosed the results of analysis of 238 SMEs' responses and opinions regarding quality awards and found a large gap between the requirements demanded by quality award systems and the reality of SMEs.

Lee and Yoo [24] found that SME had difficulty utilizing the assessment criteria of quality awards as their own self-assessment tools owing to the complexity of the assessment criteria, and that SMEs would be better off in terms of quality improvements and quality management activation than conglomerates if quality awards were operated effectively.

Lee [25] suggested that as quality management matured, it would have positive effects on companies' management performance.

To sum up of the above previous study results, driving quality management and national quality awards can contribute to improvements of management performance for companies overall, despite some negative results.

However, these previous studies focused on conglomerates and awarded companies; few studies on comprehensive management performance as required by the MB model have been conducted with respect to SMEs.

3. Study Method

3.1 Definition of Measurement Variables

The MB model divides core areas of quality management into seven categories; categories 1 to 6 are "process" areas that refer to the method of improvement, whereas category 7 is a "results" area. This study groups leadership, strategic planning, customer focus, measurement/analysis/ knowledge management, workforce focus, and operations focus, which are categorized as process areas in the MB model, into a process indicator representing a core area of quality management activities. In addition, this study groups five sub-categories of results, categorized as the results area in the MB model, as an outcome indicator, which is a performance area of quality management activities : product and process outcomes, customer-focused outcomes, workforce-focused outcomes, leadership and governance outcomes, and financial and market outcomes. The measurement variables for each category are shown in the Appendix.

3.2 Data Collection and Analysis

In the model used to conduct this study, the execution levels of 50 variables in the six categories of the process indicator and the performance levels of 23 variables in the five sub-categories of the outcome indicator were measured using a 5-point Likert scale. The higher the score, the more positive the activities and performance that the measurement variables represent. Data collection was conducted via mail and direct visit surveys with SMEs in South Korea from August to September 2012, and quality-related workers and senior managers were chosen as appropriate survey respondents in consideration of the difficulties and characteristics of a survey questionnaire; the data collection aimed to satisfy these conditions as much as possible. Targeting quality-related workers among the members participating in the public training course and quality community (http://www.piuree.com) provided by the Korean Standards Association, 300 survey questionnaires were distributed and 158 returned with responses. Out of these, the data from 116 responses that satisfied our study scope were utilized and analyzed.

Statistical processing of the collected data was done via SPSS 18.0 and AMOS 18.0, and an internal consistency method using Cronbach's alpha values, factor analysis, and path analysis was employed to analyze the data.

4. Empirical Analysis

4.1 Analysis of Reliability and Validity

The result obtained using Cronbach's alpha values, the most widely and generally used reliability analysis method of testing the homogeneity of measurement items, showed that the reliabilities of all factors in the study model were above 0.7 for the process and outcome indicators, which showed high internal consistency. Therefore, it was verified that all factors in the process and outcome indicators in this study secured the required reliability. In addition, the vari-

max factor analysis, which is widely used for validation analysis, was employed, and the items that discouraged unidimensionality were removed. In the analysis results, the measurement variables of each category in the process and outcome indicators were grouped by category as defined in the study design. Therefore, it was verified that all factors in the process and outcome indicators in this study secured the required construct validity.

The analysis results for reliability and validity are shown in <Table 1> and <Table 2>.

<Table 1> Process Indicator Reliabilities and Factor Analysis Results

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	No. of items	Cronbach's alpha
	X1	X2	X3	X4	X5	X6		
X112	**.737**	.171	.272	.212	.155	.280	7 (removed items : 3)	0.922
X111	**.707**	.094	.218	.334	.157	.216		
X113	**.699**	.080	.133	.366	.141	.347		
X114	**.697**	.356	.048	.099	.270	.218		
X115	**.608**	.282	.307	.216	.192	.275		
X125	**.525**	.258	.267	-.057	.499	.166		
X124	**.457**	.396	.345	.023	.265	.414		
X211	.168	**.711**	.239	.250	.084	.283	5 (removed items : 2)	0.901
X223	.320	**.558**	.334	.263	.362	.190		
X212	.435	**.549**	.199	.057	.330	.371		
X221	.333	**.529**	.226	.399	.286	.315		
X222	.319	**.446**	.168	.376	.432	.155		
X311	.224	.263	**.699**	.081	.218	.155	6 (removed items : 3)	0.905
X312	.124	.204	**.680**	.212	.114	.430		
X324	.245	.276	**.582**	.174	.290	.228		
X323	.406	.011	**.555**	.293	.309	.304		
X321	.300	.225	**.523**	.356	.269	.289		
X322	.245	.092	**.511**	.482	.393	.159		
X413	.185	.221	.241	**.675**	.239	.403	7 (removed items : 2)	0.945
X415	.294	.206	.153	**.614**	.420	.280		
X412	.336	.240	.369	**.550**	.203	.328		
X414	.227	.280	.293	**.549**	.494	.231		
X411	.344	.108	.331	**.545**	.253	.348		
X422	.301	.242	.057	**.491**	.316	.481		
X423	.226	.374	.143	**.473**	.329	.455		
X522	.127	.234	.180	.203	**.729**	.380	6 (removed items : 0)	0.942
X521	.176	.063	.295	.160	**.688**	.411		
X524	.243	.207	.118	.226	**.686**	.423		
X511	.197	.041	.281	.251	**.671**	.269		
X512	.168	.245	.299	.264	**.650**	.283		
X523	.226	.224	.083	.281	**.632**	.414		
X624	.339	.263	.238	.205	.292	**.672**	9 (removed items : 0)	0.961
X622	.270	.278	.219	.214	.266	**.664**		
X623	.380	.129	.252	.196	.302	**.629**		
X621	.308	.397	.200	.262	.214	**.626**		
X612	.303	.243	.195	.273	.302	**.609**		
X613	.295	.280	.243	.282	.398	**.599**		
X611	.246	.355	.200	.248	.333	**.597**		
X615	.227	.421	.308	.281	.220	**.506**		
X614	.254	.214	.279	.367	.368	**.435**		

<Table 2> Outcome Indicator Reliabilities and Factor Analysis Results

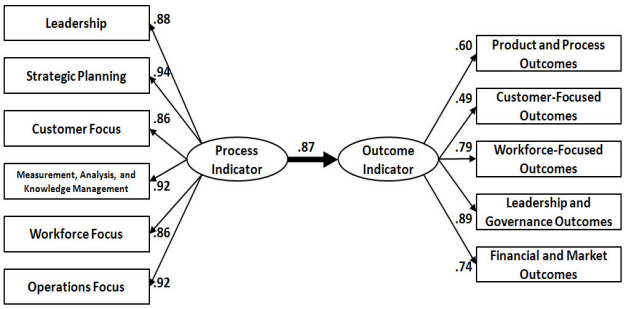
Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	No. of items	Cronbach's alpha
	Y1	Y2	Y3	Y4	Y5		
Y14	**.758**	.183	.094	.145	.328	2 (removed items : 3)	0.704
Y15	**.758**	.222	.099	.285	.065		
Y23	.166	**.852**	.197	.041	.049	2 (removed items : 1)	0.717
Y22	.132	**.691**	-.075	.273	.440		
Y32	.004	.095	**.832**	.296	.191	3 (removed items : 1)	0.845
Y33	.210	.099	**.758**	.284	.250		
Y31	.030	.236	**.573**	.492	.229		
Y43	.084	.274	.067	**.765**	.296	5 (removed items : 0)	0.881
Y42	.134	.069	.336	**.751**	.249		
Y41	.302	.096	.225	**.738**	.188		
Y44	.260	-.021	.411	**.599**	.223		
Y45	.093	.099	.489	**.578**	.295		
Y51	.079	.076	.172	.129	**.847**	6 (removed items : 0)	0.916
Y54	.179	.132	.160	.167	**.821**		
Y53	.091	.290	.216	.258	**.747**		
Y56	.178	.044	.180	.234	**.746**		
Y55	.258	.079	.215	.259	**.744**		
Y52	-.109	.278	.034	.462	**.655**		

4.2 Causality of the Process Indicator (quality Management Activities) and Outcome Indicator (results)

To analyze causality between the process indicator (quality management activities) and outcome indicator (results), a path analysis was conducted using the AMOS structural equation model.

The analysis result of the model's goodness-of-fit measures using AMOS 18.0 showed that the values of the goodness-of-fit measures were derived as follows : Chi-square = 92.074 (df = 43, p = .000), goodness of fit index (GFI : above 0.90 signifies a good fit) = .875, adjusted goodness of fit index (AGFI : above 0.80 signifies a good fit) = .808, root mean square residual (RMR : below 0.05 signifies good) = .030, normed fit index (NFI : above 0.90 signifies a good fit) = .921, Tucker-Lewis fit index (TFI : above 0.90 signifies a good fit) = .943, and comparative fit index (CFI : above 0.90 signifies a good fit) = .956. This verified that the study model is appropriate to interpret the results.

The analysis result of causality between the process indicator (quality management activities) and the outcome indicator (results) with respect to 116 companies showed that there was causality between the process indicator (quality management activities) and the outcome indicator (results), as shown in <Figure 1>.



<Figure 1> Path Coefficients of the Process and Outcome Indicators

5. Conclusion

In this study, the correlation between execution of core quality management activity areas and management results was verified by applying the MB model as a quality management performance measure for SMEs in South Korea, which has not been studied sufficiently to date.

First, factor analysis was conducted for the measured variables in each category; this showed that the process indicator was made up of six factors and the outcome indicator was made up of five factors, like those configured in the MB model framework. This result can be interpreted to mean that the categorical requirements of the MB model are con-

sistently recognized by SMEs in South Korea. This result can also be interpreted to mean that SMEs in South Korea have reached a considerably high level of execution and recognition of quality management given their current status. Moreover, the categorical requirements of the MB model are well designed, as empirically shown through the analysis of SMEs in South Korea.

Furthermore, the analysis of causality between the process indicator (quality management activities) and the outcome indicator (management results) showed high causality between them. Although the quality management levels of SMEs in South Korea are inferior to those of conglomerates or other national quality award-winning companies, this study is significant in that the causality between quality management activities and results was verified, since this study targeted SMEs in South Korea as the target of investigation. Thus, it is empirically proven that the MB model can contribute to improved management results for SMEs in Korea.

This study has limitations in that the result cannot be generalized to all SMEs in South Korea because the number of companies in this study was limited and the survey data were collected using a method designed based on the perception of respondents, which made it difficult to control response bias. These limitations will be overcome by generalizing the study results further as the scope of study is expanded and systematized in the future.

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References

[1] Adam, E.E. Jr., Alternative Quality Improvement Practices and Organization Performance, *Journal of Operations Management*, 1994, Vol. 12, No. 1, pp. 27-44.

[2] Ahire, S.L., Golhar, D.Y., and Waller, M.A., Development and Validation of TQM Implementation Constructs, *Decision Sciences*, 1996, Vol. 28, No. 1, pp. 23-56.

[3] Bank, J., The Essence of Total Quality Management, Prentice Hall Inc, 1992.

[4] Black, S.A. and Porter, L.J., Identification of the Critical Factors of TQM, *Decision Science*, 1996, Vol. 27, No. 1, pp. 1-21.

[5] Bossink, B.A.G., Gieskes, J.F.B., and Pas, T.N.M., Diagnosing Total Quality Management-Part 1, *Total Quality Management*, 1992, Vol. 3, No. 3, pp. 223-231.

[6] Chang, Y.S., Laboriz, G., and Rosansky, W., Making Quality Work, Harper Business, New York, NY, 1993.

[7] Cho, J.H., Jang, D.S., Lee, S.J., Suh, J.Y., Kim, I.N., and Chung, C.W., Efficient Method of Fixing the Setting (4M standardization) in Melting Furnace Operation, *Journal of Society of Korea Industrial and Systems Engineering*, 2007, Vol. 30, No. 1, pp. 96-104.

[8] Cho, J.H., Quality Management, Lecture notes, Department of Industrial and Systems Engineering, Kumoh National Institute of Technology, 2011.

[9] Choe, H.G., A Study on the Key Dimensions and Developmental Stages of Quality Management, [Doctoral Dissertation], Graduate School of Ewha Womans University, 1998.

[10] Eskildson, L., TQM's Role in Corporate Success : Analyzing the Evidence, *National Productivity Review*, 1995, Vol. 14, No. 4, pp. 26-27.

[11] Feigenbaum, A.V., Total Quality Control, 3rd ed, McGraw-Hill, New York, NY, 1983.

[12] Flynn, B.B., Schroeder, R.G., and Sakakibara, S., A Framework for Quality Management Research and an Associated Measurement Instrument, *Journal of Operations Management*, 1994, Vol. 11, No. 4, pp. 339-366.

[13] GAO/NSIAD-9-190, US Companies Improve Performance Through Quality Efforts, General Accounting Office, Washington, D.C., 1991.

[14] Garvin, D.A., Quality on the Line, *Harvard Business Review*, 1983, Vol. 61, No. 5, pp. 65-75.

[15] Hendricks, K.B. and Singhal, V.R., Does Implementing an Effective TQM Program Actually Improve Operating Performance? Empirical Evidence from Firms That Have Won Quality, *Management Science*, 1997, Vol. 43, No. 9, pp. 1258-1274.

[16] Hendricks, K.B. and Singhal, V.R., The Long-Run Stock Price Performance of Firms with Effective TQM Programs, *Management Science*, 2001, Vol. 49, No. 3, pp. 359-368.

[17] Hodlin, S.F., TQM and Malcolm Baldrige : A Practitioner Approach, Proceedings of the TQM Conference, gopher://vaxvmax.nanson.edu, 1994.

[18] Husband, S. and Mandal, P., A Conceptual Model for Quality Integrated Management in SMEs, *International Journal of Quality & Reliability Management*, 1999,

Vol. 16, No. 7, pp. 699-713.

[19] Jablonski, J.R., Implementing TQM, op. cit, 1992.

[20] Jeon, S., Lee, D., and Bae, M., A study on the application Method of Munition's Quality Information based on Bigdata, *Journal of the Korea Academia-Industrial Cooperation Society*, 2016, Vol. 17, No. 6, pp. 315-325.

[21] Jeon, W.S., *The Effect of Total Quality Management and Performance Measurement System on Corporate Performance*, [Doctoral Dissertation], Graduate School of Sogang University, 2003.

[22] Jung, S.I., *A Study on the Indices for the Performance Measurement in the Quality Management of SMEs : In the case of MBNQA*, [Doctoral Dissertation], Graduate School Kumoh National Institute of Technology, unpublished, 2012.

[23] Kim, S.W., Kwak, Y.H., and Choi, K.H., A Study on the Relationship between Quality Performance and Financial Performance, *Korean Standards Association*, 2005.

[24] Lee, J.K. and Yoo, H.J., A Study on Improving the Competitiveness of the Small and Medium-sized Company by TQM Survey, *Journal of the Korean Society for Quality Management*, 2004, Vol. 32, No. 3, pp. 94-107.

[25] Lee, J.S., An Analysis of the Business Performance of Small and Medium Sized Firms by the Development Stages of Quality Management, *Productivity Review*, 2005, Vol. 19, No. 1, p. 89.

[26] Leonard, F.S. and Sasser, W.E., The Incline of Quality, *Harvard Business Review*, 1982, Vol. 23, pp. 163-171.

[27] Luchs, R., Successful Businesses Compete On Quality-Not Cost., *Long Range Planning*, 1986, Vol. 19, No. 1, pp. 12-17.

[28] Park, J.H., Quality Management, Parkyoungsa, 1994.

[29] Porter, L.J. and Parker, A.J., Total Quality Management-The Critical Success Factors, *Total Quality Management*, 1993, Vol. 4, No. 1, pp. 13-22.

[30] Ross, J.E., Total Quality Management : Text, Cases and Readings, St. Lucie Press, 1993.

[31] Saraph, J.V., Benson, P.G., and Schroeder, R.G., An Instrument for Measuring the Critical Factors of Quality Management, *Decision Sciences*, 1989, Vol. 20, No. 4, pp. 810-829.

[32] Shin, H.C., A Study on the between Performance Evaluation System and Quality Result, *Journal of Management Research, Institute of Management*, 1998, Vol. 23, pp. 147-171.

[33] Shin, W.S., Hierarchically Associated Quality Performance Measurements in Quality Management, *Journal of the Korean Society for Quality Management*, 1999, Vol. 27, No. 2, pp. 163-182.

[34] Stephens, P.R., Small Business and High Performance Management Practices, [Ph.D. Dissertation], University of Cincinnati, 2000.

[35] Suh, Y.H. and Lee, H.S., A Study on the Financial Performance of Korean Quality Award Firms in the Stock Market, *Journal of the Korean Society for Quality Management*, 1999, Vol. 27, No. 3, pp. 51-66.

[36] Tenner, A.R. and Detoro, I.J., TQM : Three Steps to Continuous Improvement, Addison Wesley, 1992.

[37] Tomkovich, J.M., An Evaluation Management Practices to Very Small Businesses : Evidence From Small Accounting Firms, Colorado Technical University, 1999.

[38] Tunalv, C., Manufacturing Strategy : Plans and Business Performance, *International Journal of Operations & Production Management*, 1992, Vol. 12, No. 3, pp. 4-24.

[39] Yusof, S.M. and Aspinwall, E., A Conceptual Framework for TQM Implementation for SMEs, *TQM Magazine*, 2000, Vol. 12, No. 1, pp. 31-36.

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