

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Comparison of Firm Performance before and after the Implementation of TQM

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Abstract:

Total quality management can be considered as a tool that provides competitive advantages in terms of quality cost and services etc. it is believed that these advantages important not just to lead in the market place but also to survive in a highly competitive global market. Large companies mostly implement the TQM for the growth however small companies implement it to survive.

This study is trying to exercise the performance changes occurred by the implementation of total quality management, in a comparatively small company. Changes in the company are tracked by the model developed, that includes six dimensions. Results of the study indicate that there were serious positive developments in general, even though the degree of the improvements varies.

1. Introduction

Issues in relation to total quality management are mostly considered as large companies' themes. Because implementing total quality management applications are considered as too expensive and luxurious for small firms and medium sized firms. However, globalization, that freed the international trade, is made the usage of highly efficient techniques; such as TQM (total quality management), is a necessity even for the SME's (Small and Medium Sized Entrepreneurs) for survival. Small and medium sized firms are playing curtail roles in the economies they provide employment, flexibility in production, competition in the market place and adjust the price levels etc, but little attention is paid to the SME's implementation of TQM in comparison to larger ones (Seth and Tripathi; 2005; 256)

Theoretically, TQM can be considered as a management model, whose successful implementation, brings the success; competitive advantage in terms of quality and cost. However, TQM practices could be generated or imitated by the competitors, even by the small firms. Reed, Lemak and Mero (2000) deduce that the content of TQM is capable of producing a cost- or differentiation-based advantage, and that the tacitness and complexity that are inherent in the process of TQM have the potential to generate the barriers to imitation that are necessary for sustainability. Similarly, this study is also tried to examine whether the implementation of TQM practices provides competitive advantage in SME's and improves the firm performance. In the study performance criterions are evaluated under six bases; degree of management's approval of implementation of TQM, degree of customer approval, market performance, production performance and financial performance.

2. Literature Review

Maani et al (1994) examined the relationship between the quality practices and the organizational performance. The results of the study indicated that there was a significant relation in between the manufacturing performance and the business performance measures these are ROA, ROS, sales volume and market share, besides improvements in quality the utilization rates decreased the inventory levels and reduced the production costs etc.

Adam (1994) examined relationship between the quality improvements and, the operating and financial performance. Forker (1996) suggested that increased quality contributes the business performance and provides competitive advantages to the firms.

Ghobedian and Galar (1996) compared the small and large firms in terms of quality management. Kapuge and Smith (2007) examined the Management practices and performance measurements in Sri Lanka. Brah and Lim (2006) investigated the TQM applications and its effects on logistic companies. Choi and Eboch (1998) suggested that there is a direct relation in between TQM and operational performance

The concept of performance management system was used for the first time by Beer and Ruh (1957). Bell created a basis for the development of the performance management systems with his studies conducted in between 1978 and 1987. Competitive environment created early and after 90s, changed the way company's perception of performance management systems with a broad understanding that includes comprehensive structure and organizational strategy.

It is possible to categorize the studies in relation to performance management systems under three headings; (1) step-wise processes (Sink and Tuttle, 1990; Medori and Steple, 2000), (2) organizational hierarchy (Lynch and Cross, 1991) and studies that are trying to establish a balance between the internal and the external environment (Kaplan and Norton, 1992; Neely et al., 2001).

In the literature, there are numerous studies about performance appraisal models and their basis. A general literature review would help us summarize the works, especially in recent years, as follows:

PERFORMANCE DIMENSIONS	MULTI DIMENSIONAL PERFORMANCE EVALUATION MODELS									
	Keegan et al. 1989	Lynch and Cross 1991	Fitzgerald et al. 1991	Kaplan and Norton 1992	Bititci et al. 1997	Atkin-son et al. 1997	Chen-nel et al. 2000	Neely et al. 2002	EFQM 1991-1999	Laitinen 2002
	Performance Measurement Matrix	Performance Pyramid	Results Determinants Model	Balanced Scorecard Indicator	Integrated Performance Measurement Model	Responsibility Based Performance Evaluation Model	Organizational Performance Evaluation Model	Performance Prism Mode	European Quality Foundation Perfection Model	Integrated performance measurement model for SMEs
Financial	√	√	√	√	√	√	√	√	√	√
Customer	√	√		√	√	√	√	√	√	
Market	√	√			√		√			√
Product/Quality of Processes		√	√	√	√	√	√	√	√	√
Product /Speed of Process	√	√		√	√	√	√	√	√	
Efficiency/ Productivity		√	√	√	√			√	√	√
Flexibility		√	√		√			√		
Innovation	√		√	√				√	√	
Learning and Development	√		√	√				√	√	
Employees				√	√	√	√	√	√	
Vision/ Strategy		√		√	√		√	√	√	
Competition	√		√		√		√	√	√	√
Social Responsibility and External Environment	√				√	√	√		√	

Table 1: Multi Dimensional Performance Evaluation Models (Agca, 2009: 56).

2.1. Performance Measurement and Appraisal in Organizations

In the literature, there are numerous definitions about performance management and performance measurement and models.

Baş and Artar (1991) defined performance as the quantitative and qualitative description of the level of progress that an individual, a group or an establishment could reach regarding the target of that particular business. While Akal (1992) defined it as a concept that defines both qualitatively and quantitatively, the achievement of a focused and planned activity. On the other hand, Tanyaş (1993) indicated that performance is a measurement of achievement for the individual, a group, the society in terms of qualitative criteria and that it should be expressed in terms of cause and effect relation. According to Macey (2001) performance management is a comprehensive process that enables the organization to reach its goals via its common and functional strategies.

According to Grady (1991), to perform successful performance management activities in organizations, strategic goals and policies should be adopted and shared by the employees. In addition to these Barutcuğil (2002) defined it as a management process that includes initiating and continuing the new and necessary tasks that would result in continuous performance improvement as well as collection of and comparing data about the current status and the future of the organizations in order to reach organizations' desired goals. Harrington (1996) argues that the performance management process is comprised of definition of performance goals and criteria, performance measurement, feedback and motivation.

It is possible to define performance measurement as the process of systematic collecting and reporting of information obtained as a result of comparison or association of the factors that influence the success of an organization (Tekeli, 2003: 4). According to Harrington (1996), performance measurement is a series of tasks to determine the degree of achievement of the pre-determined goals of the organization and a sub-process of the performance management process.

2.2. Performance Analysis of the Company

The aim of the study is to compare the performance changes before and after the implementation of TQM in the organization and to find out if there was a progress after implementation in consideration to six bases.

Study took place in a medium sized company which is established in the city of Uşak in turkey that operates in textile sector and implemented TQM applications in 2005. Data subjected to the study is belong to the years 2003 and 2008.

2.2.1. Performance Model

The model designed on the basis of Stakeholder's interest. This approach can also be defined as accountability based performance measurement. This approach focuses on measuring how successfully an organization integrates and meets the requirements and expectations of its stakeholders.

Stakeholder based performance approach model includes four basic interest groups; Management and Shareholders, Employees, Customers, and Society. However, our model consists first three of them and additionally three more dimensions: production, marketing and finance, total six dimensions. The same scale is used by ELEREN (2009) in a study where quantitative and qualitative data were converted into a performance index using the TOPSIS multi-criteria decision making method and the organizations were ranked based on their performances.

Basic Dimensions	Indicators	Sub-Indicators
1.Owners and managers	Monetary benefits	Profitability of investment Production costs Profitability of sales Productivity Increase in share value
2.Customers	Customer Satisfaction	R & D Cost/quality Elasticity
3. Employees	Loyalty, efficiency	Job satisfaction Working conditions Balance between salaries and responsibilities The quality of working life Occupational health and safety
4. Marketing	Marketing Performance	Sales Market Share Sales Rebates
5. Manufacturing	Production Performance	Product diversity Product Costs Production Technology Delivery performance
6. Finance	Financial Performance	Liquidity Debts Profitability Efficiency Effectiveness

Table 2: Indicators of Model

Performance model also establishes the relation between the internal functions such as production, marketing and finance and the major stakeholder groups including senior management, shareholders and internal and external customers. It is used as a tool to determine the expected performance improvement of the organization.

2.2.2. Data Collection

For the evaluation of the first three dimensions, Likert scale questions were used. For trial purposes, the scale examined Uşak/Turkey and the scale took its final form with the confidence test (n:20, C. Alpha: 0,866)

Some of the data related to last three dimensions could not be generated and propositions in relation to them were removed from the model. Unprocessed data acquired for the search included qualitative and quantitative information, during the development of model qualitative data processed and transformed to quantitative data. For instance, raw financial inputs transformed to ratios and used in Altman's Zeta model.

2.2.3. Measurement of Performance and Findings

In this section, there are separate evaluations for a total of six dimensions included in the model.

1. Appraisal of Organization Management Practices

In this section, two types of Likert type scale questions are used. The questionnaires applied to total of 17 individuals, 12 of them were shareholders and 5 were managers.

PERFORMANCE CRITERIONS	Before TQM avg.	St. Dev	After TQM avg.	St. Dev
The quality and frequency of communication between managers and employees are increased.	2,837	0,637	3,417	0,353
The quality and frequency of communication between employees are increased	4,347	2,446	4,402	0,297
There is a two-way communication in between all units and departments.	4,589	0,136	3,914	0,429
All the financial feasibility of business initiatives is done in a careful manner.	4,397	1,897	4,834	1,211
Managers of the firms are open to new ideas and suggestions	4,630	0,899	4,954	0,329
Employees who have innovative projects can get necessarily resources and time for their projects	2,795	1,756	4,534	1,237
Employees can take initiatives on their own job.	4,974	0,684	3,798	0,285
Competitors' policies and tactics are routinely monitored.	3,723	0,820	3,741	0,774
Customers' expectations and preferences are followed routinely.	4,046	0,662	3,000	0,613
Technological and managerial developments are followed routinely	4,006	0,413	3,235	0,314
The firm has changes its strategy from being a follower to being a leader in the market.	2,855	0,538	4,975	0,081
Readiness became an asset in the firm	4,777	0,800	3,047	0,185
Company has become more competitive.	3,240	0,186	4,535	0,942
Cooperation with the rival firms is considered as a source of competitiveness.	3,330	1,287	3,704	0,318
Firm has fast moving capabilities in comparison to rival firms.	2,102	0,292	4,213	0,563
Resources devoted to R & D activities are increasing.	2,635	1,693	4,776	0,524
The number of new products is increased within the five years' time.	3,494	0,710	3,001	1,168
Importance of the research and development activities is accelerated.	2,267	1,659	3,004	0,114
Flexible organizational structures are formed to enhance the innovative and creative activities.	4,275	1,686	4,769	0,678
Our customers are happy with the services and the quality of the goods.	2,471	0,241	3,767	1,252
We have better and fast responses to the customer needs than the rival firms.	4,815	1,486	4,602	0,117
Our relationships with our clients are long-term relations.	2,670	1,473	4,268	1,938
Our customers are happy with our product prices and product quality.	2,948	0,611	4,490	0,836
Customers' requests and complaints are resolved in swiftly.	3,326	0,604	3,390	0,999
our primary strategy is focused on customer satisfaction	3,395	0,727	3,397	0,965
During the transition to flexible manufacturing systems our technology has replaced remarkably.	3,116	0,965	4,814	1,234
During the transition to flexible manufacturing systems our workforce has replaced remarkably.	4,178	0,302	4,837	1,609
N=n=17	3,564		4,087	

Table 3: Manager/Owners' Considerations

Results in relation to Likert scale questions indicate that: (1) All the responses in both periods were above the theoretical mean of 2,5 which indicate that the general views of the participants were positive. (2) Mean of the responses to the questions are increased from (3, 57) to (4, 06) after the implementation of TQM. (3) There is a positive meaningful relationship between the management's vision on the performance of the firm in comparison of the time periods before and after the implementation of TQM. The t-test results are: $t=-2766$, $df=62$, $p=0,007<0, 05$.

The table where the position of the organization is compared to those of the competition in a by the management and shareholders, is given below.

The management's and the shareholders' views on firm performance in comparison rival firms' performances, after the implementation of TQM, are given below:

PERFORMANCE CRITERIONS	Before TQM avg.	St. Dev	After TQM avg.	St. Dev
The level of reaching goals (competitors' views)	3,253	0,151	3,646	0,819
Business efficiency (competitors' views)	3,867	0,128	4,736	1,217
Business performance (competitors' views)	3,908	0,272	4,599	0,435
The market share of the business (competitors' views)	4,718	0,577	4,022	0,406
Sales (competitors' views)	2,584	0,670	3,398	0,035
Growth in sales/market share (competitors' views)	2,232	0,543	3,362	0,788
Market development (competitors' views)	4,387	0,465	3,412	0,003
Quality of the products (competitors' views)	2,798	0,237	3,015	0,789
Profitability (competitors' views)	2,674	0,690	4,438	0,632
Providing cost advantage (competitors' views)	2,296	0,554	3,502	0,568
Customer satisfaction (competitors' views)	2,671	0,736	4,271	1,680
Product diversity (competitors' views)	2,818	0,173	3,270	0,112
Product flexibility (competitors' views)	4,411	0,282	4,428	0,272
Product / technology development (competitors' views)	3,465	0,511	3,833	0,025
N=n=17	3,292		3,851	

Table 4: The Management's and The Shareholders' Views on Firm Performance in Comparison Rival Firms' Performances, After the Implementation of TQM

When the answers given to the 5-item Likert scale questions that was applied to the senior management in relation to comparison of the organization's performance with the rivals we get the result listed below:

The fact that the mean of all questions in both periods was above the theoretical mean of 2,5 which indicates that the views of the participants are positive in general.

There was a positive difference before (3,29) and after (3,85) implementation of TQM in all questions.

The results demonstrate that there is a meaningful relation in between the periods before and after the implementation. (independent t test, $t=-2,312$; $df=26$, $p=0,029<0,05$).

2. Performance Based on Employee Satisfaction

A total of 57 employees selected randomly among the 108 employees that are participated to the survey based on Likert scale in, order to determine the level of employee satisfaction. And 50 of them, whose responses were found to be sufficient were taken into account. Confidence and normal distribution tests were C. Alpha=0,897; K/S $p=0,621>0,00$.

At the beginning of the study, search in relation to employee satisfaction was not on the agenda, that is why data related to the period before the implementation of TQM could not be generated. Hence this part of the study only includes the employee satisfaction after the implementation.

PERFORMANCE CRITERIONS	N	MIN	MAX	AVG	ST. DEV
Frequent consultations with management	50	3	5	4,22	0,76
everyone has a voice in management	50	2	5	3,98	0,38
It is believed that there is a fair distribution in rewards and responsibilities.	50	1	5	3,72	0,89
There is a fair Workload distribution.	50	2	5	3,44	0,91
It is believed management taking such issues into consideration like: job satisfaction, occupational safety and peace	50	2	4	3,43	0,68
We are working with a team spirit	50	1	5	3,41	0,74
Generally, we feel happy while working	50	2	4	3,23	0,88
While working, we feel we are important.	50	1	5	3,15	1,31
There is a high level of solidarity and assistance in the workplace.	50	1	5	3,11	1,22
Level of salaries enhances our job satisfaction.	50	1	5	3,08	1,15
I believe that my job is secure	50	2	5	2,95	0,78
The success of the business is our success	50	1	4	2,76	0,92
Our responsibilities are adequate with our capabilities.	50	2	5	2,65	0,98
We are pleased with the working environment provided.	50	1	4	2,58	0,81
N=108, n=50				3,27	

Table 5: Performance Based on Employee Satisfaction

All the responses in both periods was above the theoretical mean of 2,5 that the views of the participants are positive in general.

Consultation with the employees during the decision-making process, fairness in wages policies indicates that implementation of TQM reached its goals in the organization.

3. Performance Based on Customer Satisfaction

A total of 250 customers were subjected to the 5-item Likert scale in order to evaluate customer satisfaction. 224 respondent's responses were taken in to account. Since there was no data in relation to pre-implementation period, this part of the study only includes the employee satisfaction after the implementation.

PERFORMANCE CRITERIONS	N	MIN	MAX	AVG	ST. DEV
There is an enough range of products	224	3	5	4,54	0,36
Product quality level is sufficient	224	2	5	4,42	0,48
There is always responds to compliances	224	2	4	4,01	0,14
Less Faulty products	224	1	5	3,94	0,94
Sufficient facilities and services for the customer satisfaction.	224	2	4	3,92	0,92
Appropriateness of the prices	224	1	5	3,71	1,08
Design of the products suits with the fashion.	224	2	4	3,54	0,72
Products are useful	224	1	5	3,38	1,63
The usage of the products is widening	224	1	5	3,24	1,24
Advertising and Presentations facilities are good enough to attract the customers	224	1	4	3,17	0,82
Appropriate warranty coverage	224	2	4	3,14	0,66
I trust this brand, I would prefer to buy it next time	224	1	5	3,07	1,12
Cheerful and friendly attitudes in sales staff.	224	2	4	2,92	0,94
Service facilities are fast and economical.	224	2	5	2,88	0,90
Practicality of the products	224	2	4	2,63	0,22
Usefulness of the product	224	2	4	2,55	1,02
Availability of products in retailers	224	1	5	2,51	1,26
N=1800, n=224				3,39	

Table 6: Performance Based on Customer Satisfaction

All the responses of the respondents were above the theoretical mean of 2,5 which indicates that, in general, the views of the participants are positive.

Reviewing the recommendations of the customers, it is possible to comment that their satisfaction regarding product variety and quality of products or services provided to them were improved after the implementation of TQM.

4. Marketing Performance

Local and international sales were taken as the performance indicator for marketing performance. An index based on the first year was prepared for each year.

	YEARS					
	2003	2004	2005	2006	2007	2008
Local sales (/TL)*	1.924.443	2.053.582	2.296.024	3.181.991	4.622.058	4.982.756
Increase (2003 base)	1,00	1,07	1,19	1,65	2,40	2,59
Exportation (/TL)*	250.178	225.894	275.523	477.299	739.529	548.103
Increase (2003 base)	1,00	0,90	1,10	1,91	2,96	2,19
TOPLAM	2.174.621	2.279.476	2.571.546	3.659.289	5.361.587	5.530.859
Increase (2003 base)	1,00	1,05	1,18	1,68	2,47	2,54

Table 7: Performance Based on Marketing

(*) sales numbers are discounted by the inflation rates and 2004 is assumed to be the basic year for the calculations

As table-7 clearly displays, there were increases in total sales locally and internationally for the years. However, after the implementation of TQM, rate of increase in sales have accelerated. This high level of increase in sales has prolonged even after the crises.

5. Production Performance

A total of 9 performance indicators were used for production performance and the data obtained for the period of 2003-2008 is as follows:

PERFORMANCE CRITERIA	2003	2004	2005	2006	2007	2008
Product variety	3	3	4	4	6	6
Number of patents developed	0	0	0	0	0	0
Number of defected products (per 100 units)	5,6	5,4	4,9	5,01	4,3	3,4
Capacity utilization rate	45	50	50	65	75	70
Occupational training (hours / year x person)	0	20	20	50	65	70
Number of patents owned	0	0	1	1	1	2
Number of branded products owned	2	3	3	3	3	3
Occupational accidents /year	8	9	7	7	4	4
Occupational disease complaints /year	101	94	88	90	77	81

Table 8: Production Performance Scores

Accordingly, it is seen that performance increased in 2006 and beyond.

6. Financial Performance

For financial performance evaluation, financial tables of the company for years 2003-2008 were used. These financial data were first converted into financial ratios using the ratio analysis method and then into financial achievement performance scores using the Zeta model developed by Altman.

Performance scores of the organization are given in the table below.

	YEARS					
	2003	2004	2005	2006	2007	2008
Altman Zeta	2,51	2,48	2,66	2,72	2,93	2,77
Increase (Based 2003)	1,00	0,99	1,06	1,08	1,17	1,10

Table 9: Financial Performance Scores

Altman's Z score mainly used for assessing the riskiness of the firm (Altman et al., 1977:26-51), in other words; it can also be used for performance criterion. In this study, Altman's Z score considered as a financial performance criterion.

$$\begin{aligned}
 Z = & + 1.2 * (\text{Net working capital} / \text{Total Assets}) \\
 & + 1.4 * (\text{Retained Earnings} / \text{Total Assets}) \\
 & + 3.3 * (\text{EBITDA} / \text{Total Assets}) \\
 & + 0,6 * (\text{Equity} / \text{Liabilities}) \\
 & + 0.999 * (\text{Sales} / \text{Total Assets})
 \end{aligned}
 \tag{1}$$

According to the table, financial scores except for years 2004 and 2008 display an increasing trend. A rapid increase attracts attention particularly between 2005 and 2007. The decline in 2008 in comparison to 2007 can be interpreted as the result of the crisis.

3. Conclusion

Several studies completed in the past clearly indicated that the implementation of TQM resulted with success in the large firms. However, the main queries in relation to the existing study were; could the implementation of TQM still provide competitive advantage and if the implementation of TQM gives positive results, similar to large firms.

This study has provided empirical evidence that the implementation of TQM still provides a foundation to get a competitive advantage, even in the small and medium sized firms.

Our performance model examined internal functions and external functions of the company. Results provided in the study clearly indicates that in all those six dimensions there were satisfactory positive responses in relation to the implementation of TQM. However, there could be other reasons might affect the success of the implementation, for instance replacement of the employees might have been critically reduced the potential employee resistance and renewing the machineries might have enhanced the competitiveness of the company. Even if there can be other factors that might affect the success of the firm, managements' consideration about them indicates that there was a successful implementation and successful implementation of TQM can still bring the competitiveness in the firms.

4. References

- i. Adam, E.E. Jr (1994), Alternative quality improvement practices and organization performance, Journal of Operations Management, Vol. 12, 27-44.
- ii. Agca, Veysel (2009), Türk İmalat İşletmelerinde Çok Boyutlu Performans Değerleme (PD) Modellerine Dayalı Performans Göstergelerinin Kullanılabilirliği, Dumlupınar Üniversitesi, Sosyal Bilimler Dergisi, Sayı :23, Kütahya (In Turkish).
- iii. Akal, Z. (1992), İşletmelerde Performans Ölçüm ve Denetimi. MPM Yayınları No:473, Ankara (In Turkish).
- iv. Barutcuğil, I.(2002), Performans Yönetimi, İstanbul: Kariyer Yayınları (In Turkish).
- v. Bas, M. & Artar, A., (1991), İşletmelerde Verimlilik Denetimi. MPM Yayınları No:434, Ankara (In Turkish).
- vi. Beer M.& Ruh R. A.,(1957), Employee Growth Through Performance Management, Harvard Business Review, July-August, 59-66.

- vii. Beer M.& Ruh R., Dawson J. A., McCaa B. B., Kavanagh M. J., (1978), A Performance Management System: Research, Design, Introduction and Evaluation , *Personel Psychology*, 31, 505-535.
- viii. Berry W. L.& Cooper M. C., (1999), Manufacturing Flexibility: Methods for Measuring the Impact of Product Variety on Performance in Process Industries , *Journal of Operations Management*, 17, 163-178.
- ix. Bititci U. S.& Suwignjo P., Carrie A. S., (2001), Strategy Management Through Quantitative Modelling of Performance Measurement Systems , *International Journal of Production Economics*, 69, 15-22.
- x. Brah, S. & Lim, H. (2006), The effects of technology and TQM on the performance of logistics companies, *International Journal of Physical Distribution & Logistics Management*, Vol. 36 No. 3, 192-209.
- xi. Chan D. C. K.& Yung, K. L., Ip, A. W. H., (2002), An Application of Fuzzy Sets to Process Performance Evaluation , *Integrated Manufacturing Systems*, 13/4, 237-246.
- xii. Chenhall R. H., (1996), Strategies of Manufacturing Flexibility, Manufacturing Performance Measures and Organizational Performance: An Empirical Investigation, *Integrated Manufacturing Systems*, 7/5, 25-32.
- xiii. Caporaletti L. E.& Dula J. H., Womer N. K., (1999), Performance Evaluation Based on Multiple Attributes with Nonparametric Frontiers , *Omega*, 27, 637-645.
- xiv. Chen J. P. & Chen K. S., (2004), Quality And Reliability Corner Comparison of Two Process Capabilities by Using Indices CPM : An Application to a Color STN Display , *International Journal of Quality & Reliability Management*, 21(1), 90-101.
- xv. Chennell, A. & Dransfield, S. & Field, J., Fisher, N. & Saunders, I. & Shaw, D. (2000), OPM: a system for organisational performance measurement , In *Proceedings of the Performance Measurement–Past, Present and Future Conference*, Cambridge, 19–21 July.
- xvi. Choi, T. & Eboch, K. (1998), The TQM paradox: relations among TQM practices, plant performance, and customer satisfaction, *Journal of Operations Management*, Vol. 17 No. 1, 59-75.
- xvii. Corbett C.J. & Pan J.-N., (2002), Evaluating Environmental Performance Using Statistical Process Control Techniques , *European Journal of Operational Research*, 139, 68-83.
- xviii. EFQM (1998). EFQM Mükemmellik Modeli 2000, EFQM ve Kal-Der Yayınları (Available at: <http://www.efqm.org>)
- xix. Eleren, A. (2009), İşletmelerde Çok Boyutlu Performans Ölçümü Üzerine Bir Model Önerisi ve Bir Uygulama , 6.KOBİ'ler ve Verimlilik Kongresi, İstanbul Kültür Üniversitesi, İstanbul, Kasım-2009 (In Turkish).
- xx. Fitzgerald, L., Johnson, R., Brignall, S., Silvestro, R. and Voss, C. (1991) *Performance Measurement in Service Businesses*. London: CIMA.
- xxi. Forker, L.B. (1996), The contribution of quality to business performance, *International Journal of Operations & production Management*, Vol. 16 No. 8, 44-62.
- xxii. Ghobadian, A. & Gallier, D. (1996), Total quality management in SMEs, *Omega*, Vol. 24 No. 1, 83-106.
- xxiii. Grady, M. W. (1991), Performance Measurement, Implementing Strategy , *Management Accounting*, June-1991, 137-148.
- xxiv. Heide, D. P. (1993), Comprehensive Performance Management Model, A Dissertation of Presented to the Graduate Faculty of the School of Human Behavior, United States International Univesity, San Diego.
- xxv. Johnson P. & Bell C., (1987), Focused Vision for Focused Performance , *Training and Development Journal*, December, 56-59.
- xxvi. Kaplan, R. ve Norton, D. (1992), The Balanced Scorecard: The Measures That Drive Performance , *Harvard Business Review*, Jan–Feb, 71–79.
- xxvii. Kapuge, A. & Smith, M. (2007), Management practices and performance reporting in the Sri Lankan apparel sector, *Managerial Auditing Journal*, Vol. 22 No. 3, 303-18.
- xxviii. Laitinen, E.K. (2002), A dynamic performance measurement system: evidence from small Finnish technology companies , *Scandinavian Journal of Management*, 18, 65–99.
- xxix. Lo E. K. & Pushpakumara C., (1999), Performance and Partnership in Global Manufacturing-Modelling Frameworks and Techniques , *International Journal of Production Economics*, 60(1), 261-269.
- xxx. Lynch, R & Cross, K. (1991), *Measure UP! Yardsticks for Continuous Improvement*. Oxford:Blackwell Publishing.
- xxxi. Maani, K.E. & Putterill, M.S. & Sluti, D.G. (1994), Empirical analysis of quality improvement in manufacturing, *International Journal of Quality & Reliability Management*, Vol. 11 No. 7, 19-37.
- xxxii. Macey S., (2001), An Integrated Model for Performance Management Based on ISO9000 and Business Excellence Models, Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Applied Science, Industrial Engineering at Dalhous University, Canada.
- xxxiii. Medori D. & Steple D., (2000), A Framework for Auditing and Enhancing Performance Measurement Systems , *International Journal of Operations & Production Management*, 20(5), 520-533.
- xxxiv. Richard Reeda & David J. Lemakb & Neal P. Meroc (2000) Total Quality Management and Sustainable Competitive Advantage, *Journal of Quality Management* Vol. 5, 5- 26,
- xxxv. Seth, D. & Tripathi D. (2005), Relationship between TQM and TPM implementation factors and business performance of manufacturing industry in an Indian context, *International Journal of Quality & Reliability Management*, Vol. 22 No. 3, 256-77.
- xxxvi. Smith PC. & Goddard M., (2002), Performance Management and Operational Reseach: a Marriage Made in Heaven? , *Journal of the Operational Research Society*, 53, 247-255.