

*Full Length Research Paper*

# The effects of ISO 9000 quality management system implementation in small and medium-sized textile enterprises: Turkey experience

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Accepted 4 November, 2013

This study aimed to determine the effective factors, difficulties encountered, attainable levels of the objectives in the process of certification in small and medium-sized enterprises with the ISO 9000 Quality Management Systems (QMS) certificate in Turkey Textile Sector. The study was carried out by reaching the managers that managed certification process in companies. The data collected via questionnaires were analyzed using SPSS 11.0 (SPSS, Incorporated, Chicago, Illinois) environment. The screening method was used in the research and the study group consisted of 108 small and medium-sized enterprises (SMEs) which are randomly selected. The assessments were fulfilled according to frequency, mean, standard variation related to the findings obtained from the result of responses given to the survey questions. And, in order to determine whether there are differences in the assessments according to satisfaction variable after ISO 9000 QMS certification, one-way variation analysis (ANOVA) was used. Tukey-HSD test was used to determine which groups had the possible differences; significance level was taken as  $p < .05$ . When examining certification objectives in organizations, many of them have high mean; it shows that the expectations associated with certification are high. However, the means of the difficulties encountered in certification are low. From this, it can be stated that the certification process was successful. When evaluating the benefits that the certification provided for the organizations, it is seen that the benefit was parallel with the objectives. It is seen that the means are high and the expectations are met here, too.

**Key words:** ISO 9000 QMS, SMEs, Turkish textile companies.

## INTRODUCTION

In the performance criteria, quality has a special importance for organizations. Quality has become the most important element today with the increase in the variety of goods and services production and customers' expectations. While quality was the element which provides competitive advantage in the 1980s, today, it is the main means for all companies to survive (Kavrakoglu, 1998; Ilkay and Varinli, 2005).

Organizations have tried to provide different performance criteria according to years for goods and services production in the 20<sup>th</sup> century. The leading ones are price,

quality, product range and being different (Maleki, 1991). While only one of these criteria was important at the beginning of the century, all of them are now important in recent years. The 20<sup>th</sup> and 21<sup>st</sup> centuries have been the periods in which studies related to quality and standardization were intense. In improving quality, organizations have developed processes in which everyone from employees to customers would be able to participate. On the other hand, common norms have been enhanced towards national and international trade. Thus, as a result of this, a common language which is used for contact

between organizations has emerged.

International Organization for Standardisation (ISO) has established as international institution with the aim of integrating global production and service systems in 1947 (Larson and Kerr, 2007). ISO 9000 standards prepared by this institution have been accepted as a favourite system towards improving quality (Coleman and Douglas, 2003). After achieving certification, its effect on product quality and sales competitiveness may be clearer (Shih, et al., 1996). Presently, in order to enter into the global marketplace, not having ISO certification is increasingly becoming a barrier.

A quality assurance system as laid down by the ISO 9000 QMS standards has three characteristics (Geraedts et al., 2001):

1. The principle focus is on the process of service delivery itself, not on the outcome
2. There is a systematic approach. This implies that working processes and resources are identified and that performance is measured on a regular basis, using performance indicators.
3. The system has to be variable by means of documents such as quality handbook, procedures describing the most important working process, standard operating procedures/instructions, and the measurement of performance indicators.

In 1987, the ISO 9000 QMS standards were first published in order to provide organizations with quality assurance and quality management (Calisir, 2007). However, its more advanced versions have been designed by revising in subsequent years. The first one of these revisions was published as the series of ISO 9000:1994 in 1994. The second revision was formed in the year 2000 and named as ISO 9001:2000. The changes in both two revisions are major. There have not been so major changes in the other revisions formed in different years.

ISO 9000:1994 series consist of the titles of ISO 9001, ISO 9002 and ISO 9003. And ISO 9001:2000 series are titled as ISO 9000:2000 (definitions), ISO 9001:2000 (requirements) and ISO 9004:2000 (continuous improvement) (Larson and Kerr, 2007). The standards consist of eight basic principles. These are customer focus, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationships (ISO, 2009a).

Over the years, the number of organizations with the ISO 9000 (QMS) has increased. Today, this number is over one million in 175 countries (ISO, 2009b). Certification processes of ISO 9000 QMS began in 1992 in Turkey. The Turkish Standards Institute (TSE) was quick to set up a quality infrastructure that can support the industry's shift to the ISO 9000 QMS culture in Turkey.

As a result, ISO 9000 QMS has become a common synonym for quality management all over the world,

especially in Europe and America (Ragothaman and Korte, 1999). This situation continues to increase its importance today. In Turkey too, ISO 9000 QMS became important as marketing tool in many sectors in order to export to especially European Union countries and other countries (Calisir et al., 2005).

Many studies associated with the effects of ISO 9000 QMS implementations on organizations have been done. In the study done by Beattie and Sohal (1999), it was found that improved market share was the number one benefit in the list of strategic business benefits. This was supported by customer service identified as the number two operational benefit (Beattie and Sohal, 1999). Calisir et al. (2005), on the findings of a survey of 73 large Turkish Companies, conclude that most benefits from certification were actually associated with operational improvements including increased product/service quality, reduced error/defect rate and standardization (Calisir et al., 2001). Romano (2002) has pointed out in his study that ISO 9000 certified suppliers tend to be more reliable and viewed by customers as more trustworthy. ISO 9001 certified repliers are characterized by letter level of quality system, greater top management involvement in formulating, supporting and communicating quality strategy, and larger diffusion and use of quality management procedures (Romano, 2002). In the study done by Larson and Kerr (2007), proportional improvement figures were obtained. A recent survey reports the following benefits of ISO 9000 (by these percentages of respondents): better documentation (88%), higher customer perceived quality (83%), competitive advantage (70%), enhanced internal communication (53%), and increased operational efficiency (40%) (Larson and Kerr, 2007). Heras et al. (2002) have concluded that the organizations with ISO 9000 QMS certificate were more profitable than the ones without it (Heras et al., 2002). And, among the external effects of ISO 9000 QMS, reduction in customer complaints, increase in sales and market share, increase in the number of customers, improvement in customer relations, competitive advantage, improvement in company image, accessibility to foreign markets are some of the results obtained in the studies done by Casadesus et al. (2001), Yahya and Goh (2001, Douglas et al. (2003), Magd and Cury (2003) and Williams (2004).

It is a fact that positive effects of ISO 9000 QMS implementations on organizations will also lead to positive results on the basis of sector and country. Among them, increase in production and productivity and increase in exports can be considered as the most important results.

## MATERIALS AND METHODS

Even if, different definitions and classifications are done for organizations they are generally evaluated with the number of employees and sales revenues. According the number of employees, they are classified as micro (1-9), small (50-249), and large organization (250 or more employees) (KOSGEB, 2009). Small and Medium

Enterprises (SMEs) are significant for the countries with the added value that they created in respect of economical activities and social.

This study has been done in SMEs operating in Turkish textile sector. Turkish textile sector has an important share in country's economy and exports. 12.3% of total exports of Turkey (15.7 billion dollars) have been realized by this sector in 2008 (TIM, 2009). The sector also fulfils a social and economical function which is also important in respect of employment. In recent years, the sector has begun to experience problems along with the increase of cheap production in the world. For this, the organizations that are able to reduce their cost and also to provide efficient, quality and flexible product range, can maintain their presence and growth trends.

SMEs operating in textile sector are spread throughout the country. They should fulfil the necessary circumstances in order to produce in the environment expressed above. One of the important tools is QMS certification in ensuring these circumstances. Export firms intend to export, and organizations producing to export firms have speeded up QMS certification activities with the Customs Union Agreement dealt with European Union in 1996 (Calisir et al., 2005).

### Research goals

This study aimed at determining the effective factors in certification process, difficulties encountered and the attainable level of objectives in SMEs with ISO 9000 QMS certificate in Turkish textile sector. As directed to this general purpose, responses have been searched to the following sub-problems:

1. Are the ISO 9000 QMS evaluations changed according to the variable of "consultant usage" in certification process?
2. Are the ISO 9000 QMS evaluations varied according to satisfaction levels as a result of receiving the certificate?

### STUDY METHODOLOGY AND DATA ANALYSIS

In the study, data have been collected with a measuring tool enhanced by researchers. The measuring tool is made up according to the result of searching literature related to the subject and interviews done with the sector employees. In making up the items of the scale, it has been utilized the studies of Calisir et al. (2005) and Koc (2007). In these studies, 26-item draft associated with the scale has been formed. This draft formed was presented to the experts of the subject and necessary changes and corrections were done. The preliminary application of the scale is made up of 60 respondents in sampling. Factor analysis was done for the validity study of the scale, and Cronbach's Alpha internal consistency coefficient was calculated for the reliability study

In this context, the questionnaires which are the research materials have been distributed by hand or via mail to 195 organizations in cities which are randomly selected. However, 108 of them have given positive reaction to the study. The return rate of the questionnaire was 55.4%. The assessment was done according to these 108 questionnaires. Data were entered into the computer and their analyses were performed in the SPSS 11.0 (SPSS, Inc., Chicago, Illinois) environment.

The findings obtained were evaluated according to frequency, mean and standard deviation (S.D). In the certification process, Mann-Whitney U Test analysis relating to the differences of the assessments according to the variable of "working with the consultants" was used. As the number N in the groups of independent variables is not close to each other, Mann-Whitney U Test was done (Alpar, 1998). And, in order to determine if there are differences in the assessments according to the variable of satisfaction which occurred after the respondents achieved ISO

9000 QMS certificate, one-way analysis (ANOVA) was done. Tukey-HSD Test was used to determine which groups had the possible differences; significance level was considered as  $p < .05$ . In responding to the items in the data collection tool, a five-point likert scale (1-strongly disagree, 2- disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree) was used (Tekin, 1993). The distribution of scale ranges is: 1.00-1.80-none; 1.81-2.60-a little; 2.61-3.40-a reasonable amount; 3.41-4.20- a great deal; 4.21-5.00-complete.

### Validity tests

Kaiser-Meyer-Olkin's (KMO) adequacy criterion of the sampling which considers the applicability circumstance of the descriptive factor analysis to the survey's data base is 0.82. The value of K-M-O is expected to be over 60% (Tabachinc and Fielda, 2001). The rate of sphericity test (Bartlett test of sphericity) that considers what will come out of the significant factors from data base is ( $p < .00$ ). These rates reveal that the questionnaire form is valid (Hoxley, 2000; Mitchell, 1994). In order to test the validity of questionnaire, the Factor Analysis with Varimax Rotation has been applied in 26 items. The load values of the factors are seen in Table 1. Being .45 or a higher value of the factor load value is a good criterion for selection. However, in application, this limit value can be reduced to 0.30 for a few items (Buyukozturk, 2002). As a result of factor analysis, it is seen that the eigenvalues of scale factors varied between 6.25 and 31.42%. Factor clarifies 61.27% of total variance. The first factor is "effective factors in ISO 9000 QMS certification" (13 items), the second factor is "difficulties encountered in ISO 9000 QMS certification" (8 items) and the third factor is "the benefits of ISO 9000 QMS certification" (5 items).

### Reliability tests

In order to measure the reliability and internal consistency of the scale that was used, Cronbach's Alpha coefficient was used. When measuring the differences, Cronbach's Alpha tests the reliability and internal consistency of the scale (Cronbach, 2004). While the first Cronbach's Alpha coefficient towards the dimension of "the effective factors in the ISO 9000 QMS certification" which is the first factor of the scale in reliability study carried out is calculated as 0.82, the item total correlations were between 0.35 and 0.89. While Cronbach's Alpha coefficient related to the dimension of "the difficulties encountered in ISO 9000 QMS certification" which is the second factor was 0.85, the item total correlations were between 0.37 and 0.70. While Cronbach's Alpha coefficient related to the dimension "the benefits in ISO 9000 QMS certification" which is the third factor was 0.90, the item total correlations were between 0.70 and 0.86. For whole scale, Cronbach's Alpha coefficient was calculated as 0.85, item total correlations have been realized between 0.34 and 0.74. According to this, it can be stated that the measurements obtained from the scale with the result of preliminary application have given fairly reliable results (Ozdamar, 2002).

## RESULTS AND DISCUSSION

### Demographic profiles of respondents

Demographic information associated with the organizations is given in Table 2. According to that, the vast majority of respondents (72.2%) graduated from vocational school. The rate of the organizations that intend to implement Total Quality Management (TQM) is 77.8%

**Table 1.** Principal component loading matrix for importance variables.

Variables	Component		
	F1	F2	F3
B1 The request of top management	0.79		
B2 Establishing an effective quality system	0.74		
B3 Increasing standardization in operations	0.69		
B4 Increasing customer satisfaction	0.48		
B5 The idea of product or service quality would increase	0.84		
B6 Improving business processes	0.42		
B7 Transition to Total Quality Management implementation	0.93		
B8 Increasing market share	0.88		
B9 Increasing competitive power	0.83		
B10 Institutionalization	0.84		
B11 Decreasing costs	0.63		
B12 The ISO 9000 certificate request of potential target customers	0.71		
B13 With advertising aim	0.41		
G1 That the management do not to adopt the quality management system		0.49	
G2 Cost height		0.52	
G3 That the employees do not to adopt the Quality Management System		0.84	
G4 Insufficiency of labour that could be allocated for works		0.77	
G5 Insufficient training (job-related)		0.72	
G6 That the limits of competence and responsibilities of employees are not determined		0.40	
G7 That the standard cannot be figured out or it is misinterpreted		0.72	
G8 Technologic difficulties (Calibration, inadequate equipment )		0.52	
U1 Decrease in operating costs			0.89
U2 The capacity usage increased			0.82
U3 The business efficiency increased			0.69
U4 The business profitability increased			0.59
U5 The quality prestige of the organization increased			0.69
Percentage variance explained	31.42	19.65	10.69
Percentage cumulative variance explained	31.42	51.07	61.77

and the rate of the satisfaction from ISO 9000 QMS implementation has been realized 76.9% which is a high rate. It has been pointed out that 72.2% of the organizations receive consulting services, 92.3% of these receive the service from private consulting firms.

In Table 3, the values of the mean and the standard deviation of the effective factors in ISO 9000 QMS certification have been given. The maximum value in the means has been evaluated down the five-point scale. Here, the range of the mean values varies between 2.55 and 4.33 and the mean of these values is 3.97. The values present that many factors with high means are effective in ISO 9000 QMS implementation in organizations. It has seen that one of 13 items which has the highest mean with 4.33 is "improving business processes" and the one which has the lowest mean with 2.55 is "with advertising aim". In other words, while considering "improving business processes" is the most effective factor, "with advertising aim" is evaluated as the least effective factor. And, the factors of "establishing an

effective quality system", "increasing customer satisfaction", "increasing competitive power", "increasing market share" and "institutionalization" attracted attention as other effective factors.

In Table 4, it is shown that the results of Mann-Whitney U Test is used to determine the differences of the effective factors in ISO 9000 QMS certification according to the variable of "consultants usage".

When examining the assessments in Table 4, while there are significant differences in the items of "B5" (U=666;  $p<0.05$ ), "B6" (U=738;  $p<0.05$ ), "B8" (U=486;  $p<0.05$ ), "B9" (U=558;  $p<0.05$ ), "B10" (U=414;  $p<0.05$ ), "B11" (U=864;  $p<0.05$ ), "B12" (U=432;  $p<0.05$ ) and "B13" (U=702;  $p<0.05$ ), the significant differences in other factors have not come out ( $p>0.05$ ). The significant differences have been realized in favour of the organizations that used the consultants. When considering account mean ranks, it is understood that the managers of the organizations working with the consultants need the ISO 9000 QMS certification more. It can be stated

**Table 2.** Demographic information of respondents (N=108).

Variables		Frequency	Percentage
Level of Education	Primary	6	5.6
	High school	12	11.1
	Vocational	78	72.2
	University	12	11.1
TOTAL		108	100
TQM implementation	Yes	84	77.8
	No	24	22.2
TOTAL		108	100
Satisfaction level	Glad	53	49.1
	The results worth the expenses and the studies have been obtained	30	27.8
	Increased bureaucracy and documentation	25	23.1
TOTAL		108	100
The state of receiving consultancy	Yes	78	72.2
	No	30	27.8
TOTAL		108	100
Consulting institute	Certification institute(TSE)	6	7.7
	Consulting firm	72	92.3
TOTAL		78	100

**Table 3.** The effective factors in ISO 9000 QMS certification.

Items	N	Mean	S.D.
B1 The request of top management	108	4.05	0.85
B2 Establishing an effective quality system	108	4.27	0.73
B3 Increasing standardization in operations	108	3.77	0.92
B4 Increasing customer satisfaction	108	4.27	1.20
B5 The idea of product or service quality would increase	108	4.00	1.05
B6 Improving business processes	108	4.33	0.66
B7 Transition to Total Quality Management implementation	108	3.72	0.80
B8 Increasing market share	108	4.22	1.03
B9 Increasing competitive power	108	4.27	0.87
B10 Institutionalization	108	4.22	0.71
B11 Decreasing costs	108	3.94	1.03
B12 The ISO 9000 certificate request of potential target customers	108	4.00	1.29
B13 With advertising aim	108	2.55	1.12
TOTAL	108	3,97	

that they try to turn quality and standardization into "corporate culture" which is in more professional meaning by working with the consultants that can realize that performance. It can be stated that "consultants use" causes an increase in the satisfaction levels, besides bringing an extra cost.

The findings relating to differences according to the

satisfaction levels of the evaluation of effective factors in ISO 9000 QMS certification are given in Table 5.

When examining the findings in Table 5, the items of "B2" [F(2,105)=17.394; p<.05], "B3" [F(2,105)=9.014; p<.05], "B4" [F(2,105)=19.466; p<.05], "B5" [F(2,105)=24.286; p<.05], "B8" [F(2,105)=8.076; p<.05], "B9" [F(2,105) =9.500; p<.05] and "B11" [F(2,105)=5.571; p<.05] are significant

**Table 4.** The results of Mann Whitney U Test of effective factors in ISO 9000 QMS certification towards the differences in “consultant use”

	Consultant use		Mean Rank	Sum of Ranks	Mann-Whitney U	Sig.
B1	Yes	78	56.12	4377	1044	.354
	No	30	50.30	1509		
B2	Yes	78	53.35	4161	1080	.503
	No	30	57.50	1725		
B3	Yes	78	53.58	4179	1098	.584
	No	30	56.90	1707		
B4	Yes	78	55.42	4323	1098	.568
	No	30	52.10	1563		
B5	Yes	78	60.96	4755	666	.000*
	No	30	37.70	1131		
B6	Yes	78	60.04	4683	738	.001*
	No	30	40.10	1203		
B7	Yes	78	56.35	4395	1026	.282
	No	30	49.70	1491		
B8	Yes	78	63.27	4935	486	.000*
	No	30	31.70	951		
B9	Yes	78	62.35	4863	558	.000*
	No	30	34.10	1023		
B10	Yes	78	64.19	5007	414	.000*
	No	30	29.30	879		
B11	Yes	78	58.42	4557	864	.028*
	No	30	44.30	1329		
B12	Yes	78	63.96	4989	432	.000*
	No	30	29.90	897		
B13	Yes	78	60.50	4719	702	.001*
	No	30	38.90	1167		

\*The mean difference is significant at the .05 level.

at the level of 0.05 according to satisfaction levels of the managers. However, in items “B1” [F(2,105)=1.681; p>.05], “B6” [F(2,105)=0.281; p>.05], “B7” [F(2,105)= 1.161; p>.05], “B10” [F(2,105)=0.016; p>.05], “B12” [F(2,105)= 0.247; p>.05] and “B13” [F(2,105)=1.371; p>.05], according to satisfaction levels, significant difference was not found.

In order to determine which groups had the significant differences, Tukey-HSD multiple comparison test was

applied. According to this, after achieving the QMS certificate, the items with significant differences came ; they are satisfied, have more positive approaches. The results worth the expenses and “increased bureaucracy and documentation” have been obtained. In the items “the request of top management”, “improving business processes”, “transition to Total Quality Management implementation”, “institutionalization”, “the ISO 9000 request of potential target customers” and “with

**Table 5.** The results of ANOVA relating to the difference in satisfaction levels of the effective factors in ISO 9000 QMS certification.

Items	Variance Source	Sum of Squares	df	Mean Square	F	Sig.	Tukey-Hsd
<b>B1</b>	Between Groups	2.410	2	1.205	1.681	.191	
	Within Groups	75.257	105	.717			
	<b>Total</b>	77.667	107				
<b>B2</b>	Between Groups	14.351	2	7.176	17.394	.000*	(1-2,
	Within Groups	43.315	105	.413			1-3)
	<b>Total</b>	57.667	107				
<b>B3</b>	Between Groups	13.286	2	6.643	9.014	.000*	(1-2)
	Within Groups	77.381	105	.737			
	<b>Total</b>	90.667	107				
<b>B4</b>	Between Groups	44.812	2	22.406	19.466	.000*	(1-2,
	Within Groups	120.855	105	1.151			1-3)
	<b>Total</b>	165.667	107				
<b>B5</b>	Between Groups	37.954	2	18.977	24.286	.000*	(1-2,
	Within Groups	82.046	105	.781			1-3)
	<b>Total</b>	120.000	107				
<b>B6</b>	Between Groups	1.374	2	.687	1.548	.218	
	Within Groups	46.626	105	.444			
	<b>Total</b>	48.000	107				
<b>B7</b>	Between Groups	1.507	2	.754	1.161	.317	
	Within Groups	68.159	105	.649			
	<b>Total</b>	69.667	107				
<b>B8</b>	Between Groups	15.287	2	7.644	8.076	.001*	(1-2,
	Within Groups	99.379	105	.946			1-3)
	<b>Total</b>	114.667	107				
<b>B9</b>	Between Groups	12.514	2	6.257	9.500	.000*	(1-2,
	Within Groups	69.153	105	.659			1-3)
	<b>Total</b>	81.667	107				
<b>B10</b>	Between Groups	.017	2	.008	.016	.984	
	Within Groups	54.650	105	.520			
	<b>Total</b>	54.667	107				
<b>B11</b>	Between Groups	10.905	2	5.452	5.571	.005*	(1-2,
	Within Groups	102.762	105	.979			1-3)
	<b>Total</b>	113.667	107				
<b>B12</b>	Between Groups	.843	2	.422	.247	.782	
	Within Groups	179.157	105	1.706			
	<b>Total</b>	180.000	107				
<b>B13</b>	Between Groups	3.428	2	1.714	1.371	.258	
	Within Groups	131.239	105	1.250			
	<b>Total</b>	134.667	107				

1. Satisfied; 2. The results worth the expenses and the studies have been obtained

3. It has increased bureaucracy and documentation; \*The mean difference is significant at the .05 level.

**Table 6.** The difficulties encountered in ISO 9000 QMS certification process

Items		N	Mean	S.D.
G1	That the management do not to adopt the quality management system	108	2.11	1.37
G2	Cost height	108	2.72	1.10
G3	That the employees do not to adopt the Quality Management System	108	2.61	1.25
G4	Insufficiency of labour that could be allocated for works	108	2.61	1.11
G5	Insufficient training (job-related)	108	2.88	1.10
G6	That the limits of competence and responsibilities of employees are not determined	108	2.33	1.16
G7	That the standard cannot be figured out or it is misinterpreted	108	2.33	1.29
G8	Technologic difficulties (Calibration, inadequate equipment)	108	1.83	0.76
TOTAL		108	2.43	

**Table 7.** The results of Mann Whitney U Test towards the differences in consultant use of the difficulties encountered in ISO 9000 QMS certification.

	Consultant use	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Sig.
G1	Yes	78	52.19	4071	990	.184
	No	30	60.50	1815		
G2	Yes	78	52.88	4125	1044	.368
	No	30	58.70	1761		
G3	Yes	78	53.12	4143	1062	.445
	No	30	58.10	1743		
G4	Yes	78	52.42	4089	1008	.251
	No	30	59.90	1797		
G5	Yes	78	53.35	4161	1080	.523
	No	30	57.50	1725		
G6	Yes	78	51.04	3981	900	.045*
	No	30	63.50	1905		
G7	Yes	78	55.42	4323	1098	.607
	No	30	52.10	1563		
G8	Yes	78	46.65	3639	558	.000*
	No	30	74.90	2247		

\*The mean difference is significant at the .05 level.

advertising aim”, there were no differences in the assessments relating to the difference of the satisfaction.

The values of the mean and the standard variations of the difficulties faced in ISO 9000 QMS studies are given in Table 6. The maximum value in the means has been evaluated down the five-point scale. Here, average value range varies between 1.83 and 2.88 and the mean of these values is 2.43. The values have revealed that different problems are faced in ISO 9000 QMS studies in the organizations, but the means are not high. The one that has the highest mean of 8 possible problems pointed out is “insufficient training” with 2.88, and, the one that

has the lowest mean with 1.83 is seen as “technological difficulties”. On the other hand, the problems of “cost height”, “that the employees do not adopt the quality management system” and “insufficiency of labour that can be allocated for works” can be considered as the other important items.

In order to determine the difference according to the variable of “consultant use” of the difficulties encountered in ISO 9000 QMS certification, the results of Mann-Whitney U Test are shown in Table 7.

When examining the assessments in Table 7, while significant differences are present in the items of “G6”



**Table 8.** The findings relating to the differences according to satisfaction levels of the difficulties encountered in ISO 9000 QMS certification.

Items	Variance Source	Sum of Squares	df	Mean Square	F	Sig.	Tukey-Hsd
G1	Between Groups	7.768	2	3.884	2.092	.129	
	Within Groups	194.899	105	1.856			
	Total	202.667	107				
G2	Between Groups	12.827	2	6.414	5.764	.004*	(2-1)
	Within Groups	116.839	105	1.113			
	Total	129.667	107				
G3	Between Groups	.087	2	.044	.027	.973	
	Within Groups	169.579	105	1.615			
	Total	169.667	107				
G4	Between Groups	25.806	2	12.903	12.561	.000*	(2-1, 3-1)
	Within Groups	107.861	105	1.027			
	Total	133.667	107				
G5	Between Groups	.495	2	.247	.200	.819	
	Within Groups	130.172	105	1.240			
	Total	130.667	107				
G6	Between Groups	.321	2	.160	.117	.890	
	Within Groups	143.679	105	1.368			
	Total	144.000	107				
G7	Between Groups	9.632	2	4.816	2.968	.046*	(2-1)
	Within Groups	170.368	105	1.623			
	Total	180.000	107				
G8	Between Groups	3.502	2	1.751	3.090	.050*	(2-1)
	Within Groups	59.498	105	.567			
	<b>Total</b>	<b>63.000</b>	<b>107</b>				

1. Satisfied; 2. The results worth the expenses and the studies have been obtained; 3. It has increased bureaucracy and documentation;\*The mean difference is significant at the .05 level.

( $U=900$ ;  $p<0.05$ ) and “G8” ( $U=558$ ;  $p<0.05$ ), differences at the significant level ( $p>0.05$ ) in other factors have not come out. There were significant differences realized in favour of the organizations which did not use consultants. In ASQ certification process, in the organizations that used the consultants, the means relating to the items of “determining the limits of competence and responsibilities of employees”, “technological difficulties” are lower according to the organizations which did not use consultant. It can be stated that there are parallelisms in assessments in other factors.

The findings relating to the differences according to satisfaction levels of the difficulties encountered in ISO 9000 QMS certification are given in Table 8. When examining the findings in Table 8, the items “G2” [ $F(2,105)=5.764$ ;  $p<.05$ ], “G4” [ $F(2,105)=12.561$ ;  $p<.05$ ],

“G7” [ $F(2,105)=2.968$ ;  $p<.05$ ] and “G8” [ $F(2,105)=3.090$ ;  $p<.05$ ] are significant at the level of 0.05 according to the levels of respondents’ satisfaction. However, there was no significant difference according to satisfaction levels in the items “G1” [ $F(2,105)=2.092$ ;  $p>.05$ ], “G3” [ $F(2,105)=0.027$ ;  $p>.05$ ], “G5” [ $F(2,105)=0.200$ ;  $p>.05$ ] and “G6” [ $F(2,105)=0.117$ ;  $p>.05$ ].

According to the conclusions of Tukey-HSD, the respondents whose satisfaction levels are “the results worth the expenses and the studies have been obtained” have stated that they encountered more difficulties relating to the items of “cost height”, “that the standard cannot be figured out or it is misinterpreted” and “technological difficulties” according to the ones at the level of “satisfied”. When evaluating all factors in Table 8, the respondents at the level of “satisfied” have pointed

**Table 9.** The benefits of ISO 9000 QMS certification.

Item	N	Mean	S.D.
U1 Decrease in operating costs	108	3.27	0.99
U2 The capacity usage increased	108	3.44	0.96
U3 The business efficiency increased	108	3.66	0.82
U4 The business profitability increased	108	3.27	0.80
U5 The quality prestige of the organization increased	108	4.22	0.78
TOTAL	108	3.57	

**Table 10.** The results of Mann Whitney U Test towards the difference of consultant usage of realizing level of benefits of ISO 9000 QMS certification.

	Consultant use	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Sig.
U1	Yes	78	53.35	4161	1080	.513
	No	30	57.50	1725		
U2	Yes	78	52.42	4089	1008	.244
	No	30	59.90	1797		
U3	Yes	78	54.73	4269	1152	.895
	No	30	53.90	1617		
U4	Yes	78	56.12	4377	1044	.354
	No	30	50.30	1509		
U5	Yes	78	57.27	4467	954	.111
	No	30	47.30	1419		

\*The mean difference is significant at the .05 level.

out that they had faced less difficulties. And, it is seen that there are evaluation differences between the respondents at the other two levels and them.

The mean and the standard deviation values of the benefits of ISO 9000 QMS certification are given in Table 9. The maximum value in the means has been evaluated down the five-point scale. Here, the range of mean values varies between 3.27 and 4.22 and the mean of these values is 3.57. The values have revealed that it has been significantly reached to expect benefits in ISO 9000 QMS certification. The one that has the highest mean of these five benefits with 4.22 is the item of "the quality reputation of the organization increased"; the one that has the lowest mean with 3.27 is the item of "the business profitability increased". The benefits like as "the business profitability increased" and "the capacity usage increased" are other significant ones.

The results of Mann-Whitney U Test done in order to determine the differences of the benefits of the certification according to the variable of "consultants usage" in ISO 9000 QMS certification are seen in Table 10. When examining the assessments in Table 10, there were no differences at significant level in the items "U1" (U=1080,  $p>0.05$ ), "U2" (U=1008,  $p>0.05$ ), "U3" (U=1152,

$p>0.05$ ), "U4" (U=1044,  $p>0.05$ ) and "U5" (U=954,  $p>0.05$ ). According to the situation of whether they use or not a consultant, there was no difference in evaluating the attainable levels of targeted aims of the organizations that got ISO 9000 QMS certificate. It can be stated that there is a common vision on realizing objectives.

The findings relating to the differences to satisfaction levels of the benefits of ISO 9000 QMS certification are given in Table 11. When examining the findings in Table 11, according to the significant levels of the managers, the items "U1" [F(2,105)=8.993;  $p<0.05$ ], "U2" [F(2,105)=11.064;  $p<0.05$ ], "U3" [F(2,105)=17.167;  $p<0.05$ ], "U4" [F(2,105)=8.634;  $p<0.05$ ] and "U5" [F(2,105)=7.770;  $p<0.05$ ] were significant at the level of 0.05. In the result of Tukey HSD multiple comparison test done, it is seen that the managers that have pointed out the level of "satisfied" in the all items have obtained more positive results in respect of realizing their targeted goals according to the ones at the other two levels. As a result of achieving the ISO 9000 QMS certificate, there has been a decrease in business cost and an increase in productivity, profitability and quality in the organizations. It can be stated that reaching targeted objectives has an effect which enhances the satisfaction level.

**Table 11.** The ANOVA results relating to the differences of satisfaction level of the benefits of ISO 9000 QMS certification.

Items	Variance source	Sum of squares	df	Mean square	F	Sig.	Tukey-Hsd
U1	Between Groups	15.453	2	7.727	8.993	.000*	(1-2, 1-3)
	Within Groups	90.213	105	.859			
	Total	105.667	107				
U2	Between Groups	17.174	2	8.587	11.064	.000*	(1-2, 1-3)
	Within Groups	81.492	105	.776			
	Total	98.667	107				
U3	Between Groups	17.742	2	8.871	17.167	.000*	(1-2, 1-3)
	Within Groups	54.258	105	.517			
	Total	72.000	107				
U4	Between Groups	9.839	2	4.919	8.634	.000*	(1-2, 1-3)
	Within Groups	59.828	105	.570			
	Total	69.667	107				
U5	Between Groups	8.595	2	4.297	7.770	.001*	(1-2, 1-3)
	Within Groups	58.072	105	.553			
	Total	66.667	107				

1. Satisfied; 2. The results worth the expenses and the studies have been obtained; 3. It has increased bureaucracy and documentation; \*The mean difference is significant at the .05 level.

## Conclusion

SMEs significantly contribute to their countries' economy with the benefits that they provide in respect of economical and social aspects. Textile industry is the sector in which employment is high, development and change are intense. SMEs textile firms should form the approach of production and services focused on quality in their organizations in order to maintain their characteristics like these. One of the most important tools is certification. In this study that reveals the effective factors, the difficulties encountered and benefits obtained in the process of certification in SMEs with ISO 9000 QMS certificate in Turkish Textile Sector, the following results have been achieved.

When examining the demographic structure of the firms, it is seen that they employ those who graduated from university with the rate of 83.3%. The rate of the vocational school graduates (72.2%) is high. This sector provides employment for a significant manpower trained in vocational field.

At the end of the certification, the satisfaction levels of firms have high rate (76.9%). However, 23.1% stated that bureaucracy and documentation increase is worth reviewing. On the other hand, at the end of the certification, that the rate of requests related to TQM implementation (77.8%) is high can be an indicator that organizations are in a dynamic process towards development. This rate is also in parallel with the satisfaction level.

The vast majority of organizations (72.2%) have received consulting services from out of the organizations.

However, it is a remarkable result that 27.8% can run the process with their own employees. It is seen that the levels of expectations related to the certification in the organization used consultants is higher. Besides, it can be stated that the levels of the objectives of "institutionalization", "increase in the product-services quality", "decrease in the costs" and "increasing competitive power" are higher in ISO 9000 QMS certification. In assessments related to the difficulties faced in the ISO 9000 QMS certification process, respondents who have not used consultants have further agreed with the items, "determining the limits competence and responsibilities of employees" and "technological difficulties" according to the ones who have used consultants. And, a significant difference does not exist between assessments in other items. A different evaluation has not been done between the managers who worked with the consultant and the managers who worked without the consultant in the assessments relating to attainable level of goals in the ISO 9000 QMS certification. It has been seen that both respondent groups have done studies towards the same objectives.

It is monitored that the findings obtained at the end of the research are in parallel with the results of the studies done earlier. When examining the goals of certification in the organizations, that many of them have high mean shows us the expectations from the certification are high. However, the means of the difficulties encountered in certification are low. With this situation, it can be stated that the certification process was successful. When evaluating the benefits of the certification provided for the

organization, it is seen that the benefit has been obtained towards the objectives. Here too, it is seen that the means are high and the expectations were met. In the study done by Larson and Kerr (2007), similar results were obtained in the way of proportional improvement figures.

In other words, at the result of the study, it is seen that there has been a significant increase in organizations' productivity and profitability. In the study done by Heras et al. (2002), similar results have been obtained.

The respondents in the research have stated that there was a decrease in business cost and an increase has significantly been provided in capacity usage at the result of the study. And, related to the result of these benefits too, an increase has been provided in the quality prestige of the organization. In the studies done by Casadesus et al. (2001), Yahya and Goh (2001), Douglas, et al. (2003), Magd and Cury (2003), and Williams (2004), they have achieved similar results.

In the assessments of effective factors in the ISO 9000 QMS certification process, it is understood, in respect of their opinions, that there are differences at significant level between the managers evaluated at the level of "satisfied" relating to the differences of the satisfaction level and the managers at the other satisfaction level.

As can be seen, these assessments have realized positive level as in parallel height of the satisfaction level. In the assessments relating to the difficulties encountered, the ones whose satisfaction level is "the results worth the expenses and the studies have been obtained" have encountered more difficulties according to the managers at the level of "satisfied". It can be stated that these results are in parallel with the classification of the satisfaction levels. At the end of achieving ISO 9000 QMS certificate, the organizations with attainable level of targeted objectives are high, the satisfaction levels of their managers are also high which is parallel with this.

## ACKNOWLEDGEMENTS

The authors would like to thank business managers and directors of Organized Industrial Zone for their kindness in helping to fill the survey forms during the research.

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