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## LETTER FROM THE EDITOR

Welcome to the third edition of the *Academy of Information and Management Sciences Journal*. The Academy of Information and Management Sciences is an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world.

The *AIMSJ* is a principal vehicle for achieving the objectives of the organization. The editorial mission of this journal is to publish empirical and theoretical manuscripts which advance the disciplines of Management Science and Information Systems.

As has been the case with the previous issues of the journals supported by the Allied Academies, the articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

The Editor of this Journal will continue to welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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# **Manuscripts**



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# ISO 9000 STANDARDS IMPLEMENTATION IN TURKEY: REASONS, DIFFICULTIES, AND RESULTS

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**Faruk Guder, Loyola University Chicago**  
**Tulay Yucel, Dokuz Eylul University, Turkey**

## ABSTRACT

*This paper examines the experiences of ISO 9000-certified companies in Turkey with regard to their reasons for implementing ISO 9000 standards; difficulties faced in implementing the standards; and the impact of the ISO certification on business performance measures. The study found that ISO 9000 is a recent but a growing phenomenon among the Turkish firms of all sizes, but it was more common among manufacturing firms and the firms with lower exports. The results showed that improving organizational performance and product were the most important motives for seeking ISO 9000 certification followed by market and customer related motives. The most difficult problems faced by the Turkish firms when implementing the ISO 9000 standards were too much bureaucracy and paperwork, understanding the standard requirements, and high cost of certification. The results also showed that ISO 9000 had the most impact on management and human resource related factors, followed by organizational effectiveness, customers, and had the least impact on financial and market factors. These findings indicate that the most significant benefits the Turkish firms received from implementing ISO 9000 standards were internal.*

## INTRODUCTION

Companies have had to respond to changing conditions throughout recorded history. However, the pressure on management to improve organizational performance has grown significantly over the past two decades due to the rapid changes in the global business environment. Organizations needed to improve their performance to be competitive and to adapt to changing conditions to sustain competitive advantages. As adaptive systems, organizations must respond to the forces driving the need to be competitive. These forces include demanding customers, fierce global competition, technological change, and the general environmental influences such as government and culture (Rummler and Brache, 1995).

Organizations have used a variety of approaches to improve their performances. Some of these approaches include guru-based approaches, just-in-time production, total quality management, business process reengineering, the Baldrige Award Criteria framework, or ISO standards. Management has faced different problems to implement the performance improvement efforts based on each approach. Each approach has resulted in many successes, but

also many failures. In some cases, it is difficult to measure the success of the improvement efforts. Although financial and market performance measures such as return on equity or market share have been the traditional measures, there are other business performance measures such as customer satisfaction, effectiveness of human resources, and process performance, which are perhaps a better indication of sustained success. This difficulty of determining the effectiveness of improvement initiatives is further complicated by the fact that competitors also have similar performance improvement initiatives. Lessons learned from past experiences should be helpful for organizations to better prepare for future improvement efforts.

This study reports the experiences of ISO 9000-certified organizations in Turkey. The specific objectives of this survey were: (1) To determine the reasons/motives for implementing ISO 9000 standards, (2) To identify the difficulties/problems faced in implementing the standards, (3) To examine the impact of the ISO system on business performance measures, and (4) To compare the performance measures of the firms who achieved their expectation from ISO 9000 certification with those firms who did not achieve.

### **PREVIOUS RESEARCH ON ISO 9000**

There have been a number of empirical studies conducted to examine the reasons/motives for implementing ISO 9000 standards and the benefits the companies gained from certification (Rayner and Porter, 1991; Rabbit and Bergh, 1993; Brumm, 1995; Eddy, 1995; Peach, 1995; O'Brien, 1996; Weston, 1995; Morita, 1996; MORI, 1996; SGS Yarsley, 1996; Rao, Ragu-Nathan and Solis, 1997; Chittenden, Poutziouris and Mukhtar, 1998; Al-Ghamdi, 1998; Barnes, 1998; Bhuian, 1998; Vloeberghs and Belles, 1996). These studies found that the most common motives for implementing ISO 9000 fell into the two broad categories of internal and external. The most common internal benefits were improved management control and process, workforce motivation, team building and improved internal communication, increased productivity, improved and consistent documentation, improved or higher perceived product quality, improved efficiency, cost savings and increased profits. The most important external benefits of ISO 9000 were improved/greater customer focus and satisfaction, decline in customer complaints, increased sales in global and domestic markets, increased market share, and greater marketing and competitive advantage.

A survey by Lloyd Register Quality Assurance (LRQA, 1996) compared the performance of a sample of 222 British ISO 9000 registered companies with the industry average. The study found that ISO 9000 registered companies were two to three times more profitable than their non-registered competitors. They significantly outperformed the industry average on five key financial and sales measures of profit margin, return on capital employed, sales per employee, capital employed per employee, and asset turnover. The results also showed that ISO 9000 registered companies had experienced improved efficiency and productivity, reduced waste and costs, and improved their market share. The study further found that ISO 9000 registered firms were financially better than their non-certified competitors, and small companies in particular were almost three times more profitable than the industry average.

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A number of studies have identified various problems and difficulties that the companies faced when implementing ISO 9000 standards (Morita, 1996; SGS Yarsley, 1996; Al-Ghamdi, 1998, Barnes, 1998; and Chittenden, Poutziouris and Mukhtar, 1998). The most frequently cited difficulties or problems with ISO 9000 certification were increased paperwork, internal and external interpretations of the standards, understanding the language and terminology of the standards, ISO 9000 being too prescriptive, the high level of red tape in implementing the standards and the high cost of implementation. In response to these problems, the ISO 9000 technical committee responsible for the standards conducted to identify the potential improvements for revision (Seaver, 1998). The “top seven” improvements recommended for the 2000 revision were: simpler language and terminology, easier integration into one management system, continuous improvement, a process model approach, better compatibility with other management system standards, and customer satisfaction and business orientation.

Despite the world-wide popularity of ISO 9000, Bannock (1991) concluded that there was “no rush for small firms to register” with ISO 9000 since early criticism of the standard drew attention to the complex quality management procedures, which were thought to be inappropriate to the needs of small-scale operations. It was claimed that the formality of the procedures resulted in high financial and time costs associated with developing and operating the ISO 9000 quality management system. Several studies have identified the factors that contributed the unpopularity of the standards in the small business community (North, Blackburn and Curran, 1993, 1994; Street and Fermie, 1992). These factors were being unaware of or not intending to register with the standards, considering the standards irrelevant because of the size of their business, being too costly, and being bureaucratic and incompatible with their management style.

## METHODOLOGY

In order to accomplish the study objectives, a questionnaire was designed to address each research objective. Specifically, respondents were asked: (1) The reasons for implementing ISO 9000 standards; (2) The impact of ISO 9000 certification on business performance and achieving of ISO 9000 expectations; and (3) Difficulties faced in implementing ISO 9000 standards. There were several additional questions about the selected profiles and characteristics of the firms.

The Aegean Region of Turkey, which is the southwestern part of the country, was selected for this study. This region was selected because: (1) It is one of the most industrialized regions of Turkey, (2) The region has diverse industries, and (3) There has been great interest in ISO 9000 certification. Because of these characteristics, the Aegean region gives a fairly good representation of Turkey. Also, the Izmir Chamber of Commerce (the major one in the region) was interested in assessing the impact of ISO 9000 on the performance of businesses in the region so that the future plans and strategies could be developed and/or redirected. Since the study was limited to the Aegean Region, a list of ISO 9000 certified firms in the region was obtained from Izmir Chamber of Commerce. There were a total of 111 ISO 9000 certified firms in the region when the study was conducted. The standardized, self-administered questionnaire

was mailed to all ISO 9000 certified firms in March of 1998. The survey was directed to the person who is in charge of quality management in the organization. A total of 64 useable surveys were returned. This represents a response rate of about 58 percent. The results showed that about 50% of the respondents were directly involved with some form of quality control, 8% were president/CEO or general manager, 11 % were vice president (no indication for area of responsibility), 12.7% did not respond to this question, and the rest had managerial positions in various business areas. The analyses of the results are presented in the following sections.

## RESULTS

### Selected Profiles of the Responding Firms

In order to gain some insight about the ISO 9000 certified firms, their selected profiles are presented in Table 1. The survey results indicate that the firms in the Aegean region of Turkey started receiving their ISO 9000 certification in 1993. However, this increased dramatically after 1995. Before 1995, while 9.4 % of the respondents (6 firms) had received ISO 9000 certification, the number increased sharply in 1995 to 23.4 % (15 firms). When the survey was conducted, the largest certification occurred in 1996 with 19 firms or 29.7 %, followed by 1997 with 26.6 %. These results show that about 90.6 % of the responding firms received their certification after 1995. This may indicate that there is a growing interest among Turkish firms in the Aegean region to improve the quality of their products.

There is not a major difference in the sizes of the firms, based on the number of employees, in seeking ISO 9000 certification (Table 1). While the firms with 101-250 employees have the most ISO 9000 certification (34.4 %), the firms with 501 or more employees have the lowest certification (18.0 %). The study also found that 23.0 % of the firms with less than 100 employees and 24.6 % of them with employees between 251-500 had ISO 9000 certification. These findings may suggest that the firms with 101 to 500 employees might be more responsive and/or more willing to pursue ISO 9000 certification.

ISO 9000 Certification by Years			Industrial Distribution of the Firms		
Years	Percent	n		Percent	n
1993	3.1	2	Agriculture and Food	10.9	7
1994	6.3	4	Mining	1.6	1
1995	23.4	15	Energy	4.7	3
1996	29.7	19	Manufacturing	57.8	37
1997	26.6	17	Construction	3.1	2
1998	10.9	7	Services	3.1	2
			Other	18.8	12
Firm Size Based on Employees			Export Volume (\$ 000,000)		

# of Employees	Percent	n	Exports	Percent	n
Less than 100	23.0	14	Less than \$1.0	24.3	9
101 – 250	34.4	21	\$1,001 – 5.0	35.1	13
251 – 500	24.6	15	\$5,000 – 10.0	18.9	7
More than 501	18.0	11	More than \$10.0	21.6	8

The majority of the firms (57.8 %) in the sample are in manufacturing, followed by agriculture and food industry with 10.9 %, and energy with 4.7 %. There were not many ISO 9000 certified firms in service, construction and mining industries. The “Other” category makes up 18.8 % of the respondents, which covers all other industries.

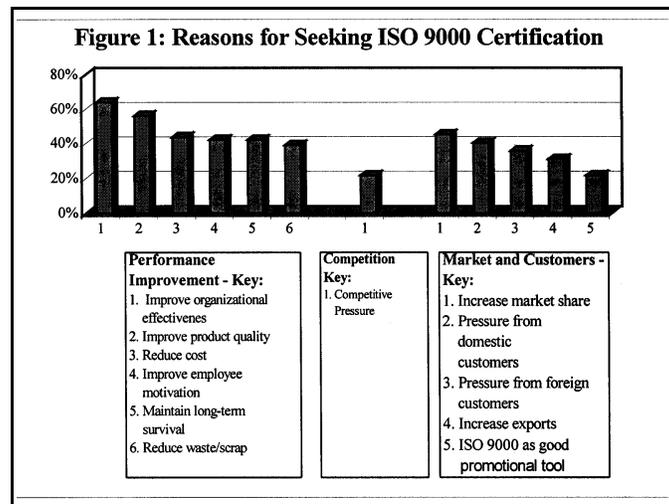
The exporting volume of the ISO 9000 certified firms are put into four groups, as presented in Table 1. The results show that the largest percent (35.1 %) of the ISO 9000-certified firms have exports of \$1.0–\$5.0 million, followed by 24.3 % with exports of less than \$ 1.0 million, 18.9 % with exports of \$5.0-\$10.0 million, and 21.6 % with exports of more than \$10.0 million. These results show that about 60.0 % of the firms with exports less than \$ 5.0 million have received ISO 9000 certification. This may suggest that since ISO 9000 has been accepted as a world wide quality standard, the firms with low exports might be more interested in ISO 9000 certification to increase their exports. The study also showed that 80.6 % of the firms are currently exporting and only 19.4 % are not exporting. The other finding of the study is that 70.3 % of the firms were certified by the Turkish Standards Institute, 17.2 % by foreign certifying organizations, and 12.5 % by both Turkish Standards Institute and Foreign certifying organizations.

### **Reasons for Implementing ISO 9000**

The motivations for receiving and implementing ISO 9000 standards are classified into three groups. These groups are organizational-specific performance improvements, competition, and market and customers-related pressures. The specific reasons for implementing within each category are presented in Figure 1. On an overall basis, the results of the survey showed that organizational performance improvement factors were more important for the firms in seeking ISO 9000 registration than competitive or market and market factors. The study found that to improve organizational effectiveness (64.1 %) and to improve product quality (56.3 %) are the two most important reasons given by the respondents for implementing ISO 9000, both of which are organizational performance factors. This may suggest that internal factors were the primary reasons for seeking ISO 9000 certification. The other organizational performance measures that the respondents rated were reduced costs (43.8 %), improve workforce motivation (42.2 %), maintain long-term survival (42.2 %), and reduce waste/scrap (39.1 %).

The study found that market and customer factors were also important reasons for seeking ISO 9000 certification. “Increasing market share was the most important reason in this

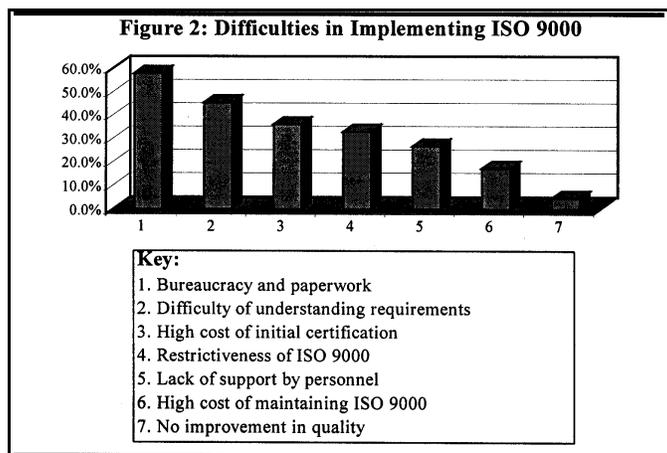
category, followed by pressure from domestic customers (40.6%), pressure from foreign customers (35.9%), increase exports (31.3%), and finally ISO 9000 as a good promotional tool (21.9%). Since increasing market share and pressure from domestic customers are the highest rated market and customer factors, this may suggest that firms seek ISO 9000 certification in response to a pressure from domestic market rather than international markets. This finding is somewhat supported by the fact that only 31.3% of the respondents stated that “to increase exports” was the reason for seeking ISO 9000 certification. The competitive pressure was the other motivation for implementing ISO 9000. However, a relatively low rating of competitive pressure (21.9%) suggests that it was not a major motivating factor for Turkish firms for seeking ISO 9000 certification.



### Difficulties in Implementing ISO 9000 Standards

One of the objectives of the study was to identify the difficulties and concerns that the firms faced in implementing the ISO 9000 standards. The respondents were asked to indicate the difficulties and/or concerns they had in seeking and/or implementing the ISO 9000 standards.

The results in Figure 2 show that the respondents had the most difficulty with bureaucracy and paperwork (57.8 %) in implementation of ISO 9000. This is followed by the difficulty of understanding the requirements (45.3 %), high cost of initial certification (35.9 %), restrictiveness of ISO 9000 (32.9%), lack of support by personnel (26.6 %), and high cost of maintaining ISO 9000 (17.2 %).



It is interesting to note that only 4.7 % of the respondents indicated “improvement change in quality” as a concern with implementing ISO 9000. This shows that about 95% of the respondents experienced some degree of improvement in quality. Since bureaucracy and paperwork coupled with the difficulty of understanding requirements seem to be the major concerns in ISO 9000 implementation, some effort could be made to reduce this burden so that firms could achieve their ISO 9000 objectives. This could be especially significant for small firms with limited resources.

### Impact of ISO 9000 on Business Performance

The survey contained a number of questions to measure the impact of ISO 9000 on effectiveness of various business performance measures. As shown in Table 4, these business activities were grouped as customer, management and human resources, financial and market, and organizational effectiveness. All the factors were measured on a five point scale, where 1=decreased very much, 2=decreased, 3=no change, 4=increased, and 5=increased very much. Also, the respondents were given a choice to indicate if it was too early to decide if ISO 9000 had had any impact on any of the business performance factors. The mean responses and frequency distributions for each factor are presented in Table 2.

The results in Table 2 show that ISO 9000 had the greatest impact on management and human resource factors. The effectiveness of quality system experienced the most increase with a mean value of 4.29, where 33.3 % of the firms responded as “increased very much” and 60.30 % responded as “increased.” This is followed by “communication among department” with a mean value of 3.88, “effectiveness of top management” with a mean value of 3.79, and “personnel motivation” with a mean value of 3.69.

The next area that showed the most improvement from ISO 9000 implementation is organizational effectiveness. In this group, defective products improved the most with the mean value of 1.95, where 18.0 % of the firms responded as “decreased very much” and 67.2 % as

“decreased.” This is followed by waste/scrap with a mean value of 2.17, and costs with a mean value of 2.78. Productivity/efficiency also showed an improvement with a mean value of 3.74.

In addition, the study found that ISO 9000 had a positive impact on customers, where the mean value of 2.07 indicated that customer complaints have decreased considerably. This is also supported by the fact that 74.2 % of the respondents indicated their customer complaints “decreased or decreased very much.” The results showed that 16.1 % of the respondents stated that the customer complaints “decreased very much” and 58.1 % of them stated it “decreased.” That means about 75 % of them have experienced some degree of decline in customer complaints, which is a good indication for improved and more satisfied customer, leading better and long-term customer relationship.

<b>TABLE 2: THE IMPACT OF ISO 9000 ON BUSINESS PERFORMANCE MEASURES</b>		
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Categories	Activities	
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