

## Cross-National Stability of a Quality Management Model: A Comparative Study of the United States and Turkey

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**Abstract.** This study explores the perceptions of American and Turkish managers with respect to different dimensions of product quality. Survey data on perceptions of product quality were obtained from managers in both countries. Analyses using structural equation modeling and mean comparison tests were performed to evaluate five research hypotheses. Results provided partial support for the hypothesized differences in quality perceptions. The data indicated that although the conceptualization of quality did not differ across the two samples, there were some differences in terms of importance assigned to various aspects of quality. In particular, Turkish managers rated aspects pertaining to communication and shared definition, quality execution, and quality control higher than American managers. Implications for the rationalist and culturalist approaches to international management are discussed.

**Keywords:** Cross-cultural Comparisons, Managerial Style, Organizational Studies, Quality Management, Structural Equation Modeling.

### 1. Introduction

The awareness of quality issues has increased dramatically in the United States during the last decades as many companies embraced quality as a management concept. Traditionally, American managers adhered to the “product-based” approach, which reflected differences in measurable attributes of the product (Crosby, 1979; Deming, 1982; Tenner & DeToro, 1992). Nowadays quality has taken on a broader meaning, encompassing customer satisfaction. Viewed from this perspective, quality becomes a basic business strategy in an increasingly competitive global marketplace

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(Kotler, 1991). Therefore, such principles as “customer focus” and “managerial involvement at all levels” have become critical supplements to the more traditional concept of “process improvement”. Other supporting elements of quality include leadership, education and training, supportive structure, communication, reward and recognition (Yavas, 1995).

Although it is not quite clear what specific practices constitute quality focus, there is evidence that companies with strong emphasis on quality as a strategic vehicle tend to outperform those operating without such emphasis (Benson, 1993; Hayes & Clark, 1985; Shetty & Buehler, 1988). A quality image, once obtained, can enhance a company’s ability to compete and its long-term opportunity for success (Flynn, Schroeder, & Sakakibara, 1995; Benson, 1993). In fact, many have attributed Japanese manufacturers’ success to their ability to convert their quality focus into a competitive advantage (Hayes & Clark, 1985; Reitsperger & Daniel, 1990a; Naisbitt, 1982; Kennedy, 1987). It has also been claimed that the decreasing share of American manufacturing in the global market is to a large extent due to the neglect of quality in the United States (Deming, 1983; Tenner & DeToro, 1992). Thus, quality and its management have become keys to success in global markets.

American companies have responded by implementing programs to improve quality management (Richardson, 1993). Many American firms now have in place quality related programs (e.g., Emerson Electric, General Motors, Ford Motor Company, Motorola, and Xerox) with terms such as “Quality Management”, “World Class Manufacturing”, “Quality is Job One” finding rather widespread use. Small and mid-size companies have also joined the ranks of larger ones in implementing some form of quality management. In short, quality has emerged in the United States as a critical issue in both achieving and sustaining competitive advantage.

Besides the United States, many other industrial countries (like Japan, Germany, Great Britain, and Canada), some of the newly industrialized countries (like Hong Kong, Taiwan, Singapore and Korea) as well as countries that are fast becoming industrial (like India and Mexico) have also adopted quality management practices (Pavett & Whitney, 1998; Yavas & Marcoulides, 1996). Theorizing about the early adoption of the Deming quality principles in Japan and the subsequent successes of Japanese firms, Yoshida (1992) suggested that management practices that are consistent with a society’s predominant cultural values are evaluated favorably, initiate feelings of satisfaction, and motivate the employee to contribute to the organization. Therefore, management styles that are consistent with the cultural values of a nation are retained. In a similar vein, Hofstede (1993) provided a framework for classifying work-related values in different

national cultures. Based on his classic study (Hofstede, 1980) consisting of analysis of questionnaire responses of over 116,000 employees in 40 countries, Hofstede concluded that it is possible to classify work-related values into four dimensions: individualism versus collectivism, power distance, uncertainty avoidance, and masculinity versus femininity. Hofstede (1980) suggested that these value dimensions influence preferences or tendencies toward certain organizational practices. For example, the degree of individualism will be related to the degree of participation in organizations and the hierarchical nature of worker-manager relations.

There are opposing views regarding the transferability of management practices between firms in different countries. The culturalist school emphasizes country of origin and argues that it would be difficult, if not impossible, to transfer management practices because of major cultural differences (Beechler & Yang, 1993). According to this view, although many products and services are becoming common across different countries they still mean different things in different countries. The rationalistic school, on the other hand, argues that management practices are rational responses to such factors as industrial development, technological level, and the degree of competitiveness. Therefore, conditions determine what management practices will be used, not geographic location. Viewed from this angle, the concept of business environment as a more cosmopolitan influence suggests movement toward homogeneity among societies (Ralston, et al., 1997).

While the culturalist view is sensitive to cultural differences among nations, it ignores the role played by globalization of business in the sense of management practices becoming more and more similar across organizations and countries. Similarly, the rationalistic school neglects to consider country of origin while emphasizing economic and technological factors. The debate within globalization as to how much worldwide integration vs. national responsiveness a multinational firm needs is an important one. Bartlett and Ghoshal (1989) argue that transnational companies need to do both. Increasing globalization of business (as separate from internationalization) requires firms to figure out how to operate in different countries. One aspect of this is how technological/management practices diffuse across national boundaries. Also, globalization has made the debate over convergence/divergence of management practices much more important: can we have seamless operations if the assumptions and ways that management is practiced around the world differ so greatly?

Further evidence for the utility of a reconciliation between the culturalist and rationalist paradigms can be found by reviewing the numerous empirical investigations that have been conducted following Hofstede's classic

study (Beechler & Yang, 1993; Bryman et al., 1982; Daniel & Reitsperger, 1994; Dilber, 1981; Gibson, 1995; Gibson & Marcoulides, 1995; Jenner, 1982; Misumi, 1985; Offermann & Hellmann, 1997; Pavett & Whitman, 1998; Yavas & Burrows, 1994). Most of these studies have attempted to link various cultural attributes with particular managerial styles. Unfortunately, the studies fail to indicate any clear conclusions with regard to why similarities and differences exist across cultures. In fact, there often appears to be a certain irony about the pattern of findings. Models that characterize the United States have often found support in countries that are thought to be dissimilar to the United States in terms of cultural values. For example, Misumi (1985) demonstrated that although the Japanese are thought to be quite dissimilar to Americans in terms of cultural values, managers in Japan appear to use an array of managerial styles (both task-oriented/autocratic and relationship-oriented/participative) in a manner similar to managers in the United States. In addition, American management style models have sometimes been rejected in countries that are thought to be similar to the United States. For example, Jenner (1982) found that Americans are more individualistic and achievement oriented than Australians and Dowling and Nagel (1986) found that Americans placed greater emphasis on personality fulfillment and equality than did Australians.

Perhaps some of the strongest evidence for the explanatory power of a reconciliation between the culturalist and rationalist approach was demonstrated by Yavas and Marcoulides (1996) in their investigation of a six-factor quality management model across the United States and four Asian countries. The six-factor model utilized was based on earlier models in the literature (e.g., Reitsperger & Daniel, 1990a, 1990b; Tenner & Toro, 1993; Yavas, 1995). In general, Yavas and Marcoulides' (1996) results indicated that the six-factor quality management model was invariant across the countries studied. However, intriguing differences were observed with respect to the item loadings on the factors, indicating that the way in which the factors were defined differed across cultures.

Pavett and Whitney (1998) report similarly mixed results in their cross-cultural study on quality attitudes in Mexico, Australia and the United States, concluding that cultural differences do not necessarily imply differences in quality related values. These findings provide preliminary support for the notion that although managerial styles may be generalizable across countries, the defining characteristics of managerial styles differ depending upon the cultural values held by the managers.

### 1.1. Objectives of the study

While there are numerous studies devoted to quality management practices of Japanese and American managers, there are not many studies on emerging economies. Where do managers from emerging economies stand with regard to their views on quality management? As globalization gains momentum and emerging economies move toward the free enterprise system of the Western world, do their managerial values undergo similar changes? More specifically, will exposure to Western ways of doing business result in adoption of Western values or is culture a sufficiently stubborn force to ensure that whatever exposure there may be to the West, managerial values will continue to be different for businesses from different countries?

Because quality management is a recent concern for developing countries (Pavett & Whitman, 1998), our study sought to examine managerial attitudes in a comparative cross-cultural context, involving a developing or emerging nation (Turkey) and a developed country (United States). The focus of the study was on individual perceptions on both the theory and implementation of quality management. The study examines the generalizability of quality management practices across managers from American and Turkish firms using structural equation modeling techniques (Jöreskog & Sörbom, 1993). The proposed model posits the existence of several latent variables (or constructs) that together comprise visible aspects of an organization's quality management practices.

The main focus of this study is cross-cultural managerial perceptions regarding quality. There is no doubt that the global marketplace and the reality of working in multicultural environments have made an understanding of potential cross-country differences imperative. The present study attempts to enhance our understanding of the applicability of workplace dynamics on a more global level by examining the relative importance of variables that govern perceptions of quality management. More than ever, companies are having to interact with people from other countries. In the days of cross-border strategic alliances and emphasis on teamwork, it would be tragic if cultural differences are mishandled or simply ignored. On the other hand, however, there is a potential to create sustainable competitive advantages if one successfully handles these cultural differences.

### 1.2. Domain of the investigation

The purpose of this study was to examine the invariance of a quality management model (Yavas & Marcoulides, 1996) across managers from two countries: the United States and Turkey. The two countries examined

were deliberately chosen based on previous research (discussed below) in order to compare very divergent cultures. By comparing the components of a quality management model across these two countries, we can begin to understand features of quality management, which are shared across divergent cultures and features that are unique to each culture. If the quality management model is invariant across the two countries, this provides support for the rationalist approach. If the model does show variance across the two countries, and this variance appears to coincide with cultural differences, this provides support for the culturalist approach. In general terms, two research questions were investigated: Do managers from two different countries respond to a set of items in a manner that results in similar dimensions of quality management? Are the responses to these items similar across the two countries?

Turkey is a country that bridges the continents of Asia and Europe and has elements of both Western and Eastern traditions as well as ideologies. While predominantly Moslem, since the conquest of Constantinople (present-day Istanbul) by the Ottomans in 1453, the Turks lived in or near Europe and interacted with Europeans assimilating parts of European culture over time. In 1923, Turkey was established as a secular republic, sole example among the Islamic societies. Major shifts from Islamic to European legal codes, closing of religious schools and recognition of the Western calendar all came with secularism.

There were also a number of economic reasons for selecting Turkey in this study. In the mid-1980s Turkey was in the ranks of the fastest growing economies in the Organization for Economic Cooperation and Development (OECD). Average annual growth rates in Turkey over the past decade were the highest of any OECD country. GNP growth in 1995 and 1996 reached 8.1 and 7.9 percent, respectively (U.S., Dept. of Commerce, 1998). Today Turkey continues to build on the framework of a free-market economy with an export-led growth strategy and liberal foreign investment policy. The government has made it a priority to improve the investment conditions in Turkey. Free-trade zones (FTZs) have been established to expand Turkey's position as a center for offshore business and as a link between Europe, the Middle East and Central Asia. Therefore, Turkey as an emerging market, has recently become very attractive for many multinational companies. Turkey's outstanding growth prospects led to its designation by the U.S. Department of Commerce as one of the ten "Big Emerging Markets." To help American firms position themselves to profitably participate in this growing market of 62 million consumers, the United States has increased its promotional efforts on several key industries.

The younger private sector managers in Turkey also appear to be quite open to modern management techniques (Pope & Pope, 1998). Major business schools conduct their curriculum in English and typically use American texts (Higher Education Council, 1999). Many private sector managers are also graduates of American business schools (Kabasakal, 1998). Not surprisingly, total quality management (TQM) has quickly gained widespread acceptance and implementation. In fact, one of Turkey's major companies, BRISA tire company, a joint venture between Bridgestone Company of Japan and Sabanci Holding, became the first Turkish company to be awarded the European Quality Award (i.e., the European equivalent of the American Malcomb Baldrige award - Sabanci, 1999).

### 1.3. Hypotheses examined

The Yavas and Marcoulides (1996) quality management model provides a framework within which to consider the effects of cultural differences, especially in terms of understanding people's conception of quality management, coordination and control of organizational activities to achieve quality-related goals, and the roles and relations of employees at various levels within the organization. The model consists of a continuum of six factors, namely "communication/shared definition", "quality execution", "commitment", "control/responsibility", "current status", and "measurement" (see Figure 1 for a path diagram of the model and Table 1 for a description of the items for each factor). It is important to note that these factors are similar to factors identified as important in many other studies on quality management (e.g., Anderson, et al., 1994; Ishikawa, 1985; Pavett & Whitney, 1998).

The following factors are included in this model (for a description of the items on each factor, see Table 1):

**Factor 1:** Communication and Shared Definition

**Factor 2:** Quality Execution

**Factor 3:** Commitment

**Factor 4:** Control and Responsibility

**Factor 5:** Current Status

**Factor 6:** Measurement

In accordance with the rationalist approach to cultural influences, we expect that managers in the United States and Turkey will conceptualize quality similarly (i.e., the structure of the proposed six-factor quality management model will be similar across the two cultures investigated in this study). A significant number of previous studies would indicate this

*Table 1.* Items Used to Measure the Six Dimensions of Quality Based on the Yavas and Marcoulides (1996) Model.

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**Factor 1: Communication and Shared Definition**

There is adequate communication between departments in my company (X1)\*

The concept of quality is the same throughout all departments (X2)

The concept of quality is the same throughout all organizational levels (X3)

**Factor 2: Quality Execution**

Improving quality will result in more repeat sales to our customers (X4)

My company warrants our products from failure due to workmanship or material quality (X5)

Automation improves quality (X6)

**Factor 3: Commitment**

Employees' commitment to quality is high (X7)

Top management is strongly committed to quality (X8)

Middle management is strongly committed to quality (X9)

**Factor 4: Control and Responsibility**

Frequent checks and inspections help improve quality (Xx10)

Product quality is the responsibility of manufacturing (X11)

Participating in quality circle workshops helps understand quality related issues (X12)

**Factor 5: Current Status**

Quality is a problem in my company (X13)

**Factor 6: Measurement**

Our product quality is measured by its performance (X14)

Our product quality is determined by its durability (X15)

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\*All the items were measured using 5-point likert scales

to be the case not only with respect to the United States and Turkey in particular, but perhaps any two cultures in general.

A comprehensive cross-industry (e.g., automotive, banking, computer, healthcare) study of quality management practices across Japan, Germany, and the United States revealed that there seems to be a consensus among countries and industries in terms of how quality management was defined (Hammond, 1991). However, respondents from the three countries seemed to differ in terms of importance of various aspects. For example, while



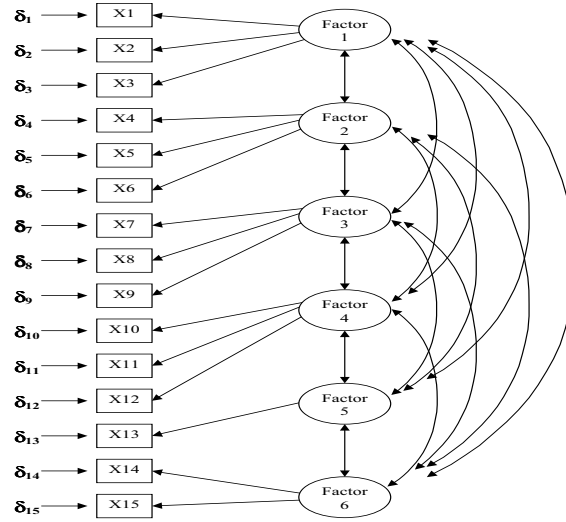


Figure 1. The Yavas and Marcoulides (1996) quality management model.

quality standards, technical accuracy, and customer approval were considered aspects of quality by all respondents, the Germans were most oriented towards product standards, the Japanese valued precision and accuracy higher than the other two groups, and the Americans were more highly concerned about customer approval than the other two groups (Hammond, 1991). Similarly, in a study of Spanish and American quality assurance managers, Lewis (1992) found no significant differences between the two cultures in terms of various characteristics of total quality management. Other studies including Daniel and Reitsperger (1994), Reitsperger and Daniel (1990a and 1990b) and Yavas and Marcoulides (1996) have elaborated upon the increasing similarity of quality aspects across the United States and Japan.

Prior studies involving Turkish firms have also indicated results similar to the research summarized earlier. For example, research conducted by Lauter (1968) found no significant differences between American and Turkish firms in terms of organization, team building, execution, and control. Thus, based on the rationalist approach and the above research evidence, we expected managers in the United States and Turkey to report simi-

lar conceptualizations of quality management. The following hypotheses summarize our expectations in accordance with the rationalist approach:

**H1:** *The same six quality management factors will exist among both Turkish and American managers.*

**H2:** *The factor loadings for specific items defining each factor will be invariant across Turkish and American managers.*

**H3:** *The factor intercorrelations (the degree to which the factors are correlated) will be invariant across the Turkish and American managers.*

**H4:** *The error variance will be invariant across the Turkish and American managers.*

Although we expect that a range of styles will exist in both cultures, additional evidence suggests that the emphasis placed on each factor will differ in Turkey and the United States. Several studies suggest this is the case. Research conducted by Hofstede (1980), for example, indicated that managerial and organizational practices may be different in countries that belong to different clusters based on cultural value similarities. The United States and Turkey are quite opposite in terms of the four dimensions of culture which characterize most workplaces. In terms of power distance and uncertainty avoidance, American managers demonstrated little power differences and low uncertainty avoidance, whereas Turkish managers demonstrated strong power differences and a strong tendency to avoid uncertainty (Gannon, 1994). In terms of individualism-collectivism, American managers demonstrated strong individualistic tendencies, whereas Turkish managers were collectivistic. Turks have a need for affiliation and individual identity is determined on the basis of group membership. Conformity to group norms and traditions is expected; trust and reliance within the group are important (Dindi & Gazur, 1989). And finally, in terms of masculinity/femininity, American managers demonstrated the agentic tendencies that coincide with masculinity, whereas Turkish managers demonstrated the communal tendencies that coincide with femininity (see Hofstede, 1980).

Research indicates that these cultural configurations may result in different managerial behaviors (e.g., Offermann & Hellmann, 1997). Countries with a lower than average score on individualism (e.g., Turkey) might favor group over individual decision making. Countries with a higher than average score on individualism (e.g., United States) on the other hand, might display the opposite tendencies. Similarly, small power distance countries (e.g., United States) may have preference for decentralized organizations compared to countries with a higher score on this dimension (e.g., Turkey). Investigating managerial behavior within the Turkish context, Kenis (1977) found that Turkish first-line supervisors used participative management

less often than their American counterparts and the American supervisors had a slightly higher need for independence than their Turkish counterparts. Marcoulides, Yavas, Bilgin, and Gibson (1998), in a study of leadership styles, also demonstrated that Turkish managers emphasized the autocratic leadership style to a greater extent and the consensus style to a lesser extent than did American managers. Thus, based on these past research findings, we propose the following hypothesis in conjunction with the culturalist approach to international management:

**H5:** *Turkish and American managers will emphasize different aspects of quality management (i.e., the factor means will be different across the sample of Turkish and American managers).*

In summary, we acknowledge that some similarities exist between Turkish and American managers in terms of the managerial styles used, but also recognize the unique aspects of each culture. Such a view reconciles the rationalist and culturalist paradigms.

The remainder of the paper is divided into three sections. The first deals with the participants and the instrumentation used to gather data. The second section presents the method used to test the model and the results of the analyses carried out. In the third section we discuss the implications for understanding quality management practices across different cultures. Consistent with Schein (1990), our goal is to develop a “road map” that suggests and examines the relationships among variables comprising quality management and how they compare in the United States and Turkey.

## 2. Methodology

This study includes data obtained from 27 different companies (13 based in the United States and 14 in Turkey). A total of 100 American managers (corresponding to just over 7 participants per company) and 152 Turkish managers (corresponding to just over 10 participants per company) participated in this study. The instrument used to collect the sample information was a questionnaire containing various opinion statements on perceptions of different dimensions of quality. In developing this instrument, the quality management literature was carefully reviewed, past empirical work was studied, and both business and academic experts were consulted. The result was a sample of questions that encompassed quality issues and attitudes consistent with the definition of quality postulated by Kotler (1991), Garvin (1988), and Tenner and DeToro (1992). The questionnaire was pretested and the results were used to refine the questionnaire, thereby enhancing its psychometric properties. Cronbach alpha coefficients for each

formed subscale were also computed and found to be well above commonly accepted levels (.8) of reliability.

The questionnaire was administered to a sample of 13 companies based in the United States, and to a sample of 14 companies in Turkey. The American firms in the sample were located in California, Arizona, Florida, New Hampshire and Texas. Turkish companies were based in the greater Istanbul area where most industries in Turkey are located. Respondents were asked to indicate their perceptions regarding different attributes of quality, using a five-point Likert-type scale. The study specifically targeted middle managers because they were assumed to know more about what actually takes place in the workplace. Since middle management is closer to the actual production process, these managers were believed to have a perception lacking in upper management of quality as the lubricant that makes their own sphere of operations function more smoothly. Based on the titles declared in the responses, similar numbers of predominantly middle level managers from both countries responded to the questionnaire.

In the United States, two hundred questionnaires were mailed or hand-delivered to the companies in the sample, followed up by telephone and fax inquires. One hundred fully usable questionnaires were returned representing a 50% response rate. In Turkey, one hundred eighty questionnaires were mailed and one hundred fifty-two usable were returned (response rate of 85%). The higher than usual response rates were primarily due to the involvement in data collection of two directors of engineering in California and a director of quality management, a Marketing Professor and a vice-president in a manufacturing firm in Turkey.

In order to survey the Turkish sample, the English version of the questionnaire was translated into Turkish by the first author. Once the Turkish version was prepared, one other Turkish professor, an organizational theorist was asked to check the instrument and compare it to the English version. Finally, in order to check the reliability of the translation from English to Turkish, a blind back-translation of the Turkish version of the instrument was conducted. The results verified that the Turkish version was a good representation of the English version. A few minor changes in wording resulted in the final Turkish version of the instrument used in the study.

It is important to note that, although the companies sampled from each country for this study were not randomly selected, every effort was made to include a representative number of companies from various industries (e.g., auto, electronics) in terms of size (annual sales volume and number of employees) and in terms of product lines. To examine the comparability of the samples used in the study several preliminary tests of statistical

significance were conducted. The statistical tests were conducted to ensure that any observed differences in the response patterns for the two samples were not due to previously existing demographic or other organizational differences. Specifically, three hypotheses dealing with demographic and organizational variables were tested for similarity: (i) the managerial level of participants from each country, (ii) number of years of experience, and (iii) the industry type. The results of these tests indicated that there were no significant differences between the American and Turkish respondents. These results are consistent with some recent work on the effect of industry (Rumelt, 1991; Morrison & Roth, 1992), which indicate that industry effects are not as important as business unit effects. Also, the response bias in the data was assessed by comparing the answers in early versus late responses on selected items such as quality-cost trade-off, the roles played by statistical process control and quality circles, and zero defects vs. yields. There were no significant differences.

### 2.1. Analyses procedures

In the methodological literature, data analyses that are used to compare the similarities of proposed models across different samples are generally referred to as tests of model invariance. Tests of model invariance based on confirmatory factor analyses are part of a more general class of approaches called structural equation modeling (SEM). One of the most widely used structural equation modeling computer programs; LISREL VIII (Jöreskog and Sörbom 1993) was used to test for model invariance in this study.

The LISREL approach for testing invariance hypotheses is identical to that used in traditional SEM model fitting. That is, a model in which certain parameters are constrained to be equal across groups is compared with a less restrictive model. The model is subsequently examined to determine whether the model and the individual parameter estimates (e.g., the items defining each factor, the factor intercorrelations, etc.) are the same across the different samples. Failure to reject the null hypothesis for each model is interpreted as evidence of factorial invariance across groups. In order to evaluate model fit, two fit indices are computed; the chi-square to its degree of freedom ratio ( $\chi^2/df$ ) and the comparative fit index (*CFI*). These indices were selected because of their widespread use in SEM (Marcoulides & Hershberger, 1997). It is generally recognized that observed values for  $\chi^2/df < 2$  and values for *CFI*  $> .9$  are needed to support model fit (Marcoulides & Schumacker, 1996).

As presented previously, five hypotheses were formulated for testing in this study. Hypothesis one related to the assertion that the same six factors

are present in the data from each country (H1). As such, a pre-defined six-factor Quality model (see Yavas & Marcoulides, 1996) was tested across the samples from both countries.

The remaining four hypotheses of model invariance were conducted in a hierarchical fashion at each stage adding an additional constraint. For example, Hypothesis two (H2) focused on the equality of the actual factor loadings, in addition to the number of factors for the two groups (H1). Hypothesis three (H3) then added the constraint of the equality of factor intercorrelations for the two countries, whereas Hypothesis four (H4) also evaluated the equality of error variances across the two countries. Finally, factor mean comparisons were conducted to determine whether the means of the quality management factors were invariant across the two countries (H5). It was predicted that the Turkish managers would have significantly different means on some of the quality dimensions.

### 3. Results

Multi-sample analysis within the SEM framework was used to compare a six-factor quality model (see model presented in Figure 1) across the two samples. Consistent with Hypothesis one (H1), the first model estimated was a six-factor model. This model fit the data reasonably well ( $\chi^2/df = 201.5/150 = 1.34$ ;  $CFI = 0.92$ ). This test indicated the presence of a similar six-factor structure across the two groups (Hypothesis one). (See Table 3 for complete summary of the results).

Further analyses involved constraining selected parameters from the six-factor model estimated above according to the hypotheses of interest. Consistent with Hypothesis two, a second model was estimated by constraining the factor loadings across the two groups to be invariant. The model fit the data equally well ( $\chi^2/df = 206.4/165 = 1.25$ ;  $CFI = 0.94$ ), and the chi-square difference test (that enables one to compare a more constrained model to a less constrained one – i.e., H1 compared to H2) did not result in a deterioration of model fit ( $\chi_{H1}^2 - \chi_{H2}^2 = 4.9$  with 15 degrees of freedom,  $p > .05$  – which is non-significant). Thus, the same six factors and factor loadings were invariant across the American and Turkish samples (Hypothesis two).

Consistent with Hypothesis three (H3), another model was estimated by constraining the factor loadings *and* factor intercorrelations across the two groups. The results ( $\chi^2/df = 230.1/180 = 1.28$ ;  $CFI = 0.92$ ) indicated that this model fit the data equally well and did not result in a deterioration over Model two ( $\chi_{H2}^2 - \chi_{H3}^2 = 23.7$  with 15 degrees of freedom,  $p > .05$ ), thus implying that the American and Turkish samples did not differ in

Table 2. Goodness of Fit Indices for American and Turkish Samples.

	<b>Hypothesis Description</b>	$\chi^2$	df	$\chi^2/df$	CFI
1	Equal Number of Factors	201.5	150	1.34	0.92
2	Equal Number of Factors, Item Loadings	206.4	165	1.25	0.94
3	Equal Number of Factors, Item Loadings, Factor Corre- lations	230.1	180	1.28	0.92
4	Equal Number of Factors, Item Loadings, Factor Corre- lations, Measurement Errors	237.5	195	1.22	0.93

terms of the same six factors, factor loadings and factor intercorrelations (Hypothesis three).

In order to test for equality of measurement error (error variance) across the American and Turkish samples, a fourth model was estimated. This model specified the six-factor structure, with equal factor loadings, factor correlations, and measurement errors across the two groups. This model fit the data equally well ( $\chi^2/df = 237.5/195 = 1.22$ ;  $CFI = 0.93$ ), and did not lead to a deterioration of the fit over Model three ( $\chi^2_{H3} - \chi^2_{H4} = 6.4$  with 15 degrees of freedom,  $p > .05$ ). Hence the American and Turkish samples did not vary in terms of measurement errors (Hypothesis four).

Although the American and Turkish managers' perceptions of quality did not differ in terms of number of factors, factor loadings, factor correlations, and measurement errors, it was believed that there would be mean differences in terms of various aspects of quality. Thus, the last set of analyses involved testing for mean differences across the American and Turkish samples in terms of the six aspects of quality considered in this research. This was accomplished by estimating Model five, involving the means of the six factors across the American and Turkish samples (Hypothesis five).

In order to estimate Model five, the procedures outlined by Sörbom (1974) were initially followed. Because the origin of any latent variable is somewhat arbitrary (and estimation of *separate* intercept terms for arbitrary scales is not possible), the intercepts were fixed to zero for each of the six factors in the American sample. Subsequently, we constrained the intercept terms across the two samples and examined their differences. As presented in Table 3, the estimated intercepts for the six factors represent mean differences in the factors across the two samples.

Table 3. Factor Mean Comparisons for the American and Turkish Samples.

Quality Dimension	Mean Difference*	Standard Error	Critical Ratio
Communication and Shared Definition	0.718	0.129	5.59**
Quality Execution	0.150	0.074	2.03**
Commitment	0.181	0.113	1.61
Control and Responsibility	0.546	0.155	3.53**
Current Status	-0.102	0.208	-0.49
Quality Measurement	-0.120	0.119	-1.01

\* The mean levels of the six quality dimensions for the American sample were fixed at zero. The means represent the amount by which factor means for the Turkish sample differ from those for the American sample.

\*\*  $p < 0.01$

Table 4. Summated Scores of the Six Quality Dimensions for the American and Turkish Samples.

Quality Dimension	Mean		t-Value
	American	Turkish	
Communication and Shared Definition	8.34	11.38	6.33*
Quality Execution	12.09	13.06	2.66*
Commitment	11.95	12.62	1.62
Control and Responsibility	9.43	11.33	3.75*
Current Status	2.91	2.81	0.47
Quality Measurement	7.46	7.27	0.61

\* $p < 0.01$

Mean comparison results indicated that there were indeed some significant differences between the two samples in terms of levels of various quality aspects (see Table 3). It is also interesting to note that for the three quality dimensions where a significant difference was found, Turkish managers rated the aspect higher than did the American managers. In particular, Turkish managers rated aspects dealing with communication and shared



definition of quality, quality execution, and quality control & responsibility higher than their American counterparts. No differences in mean levels were found for aspects relating to quality commitment, quality measurement, and current status

In order to verify the results of the SEM factor mean comparisons (and due to the somewhat arbitrary nature of latent mean values – i.e., the intercepts used), we also computed independent sample t-tests for summated measures for each of the six quality aspects across the American and Turkish samples (see Table 4). As expected, the t-test results corroborated the previous mean comparison results of the SEM analyses. Thus, although managers in the United States and Turkey seem to conceptualize quality similarly, there are some important differences in terms of the emphasis placed on some particular aspects of quality. Specifically, Turkish managers rate “communication and shared definition”, “control and responsibility”, and “quality execution” much higher than their American counterparts.

It is interesting to note that some of the results are at variance with expectations from the culturalist school. It may be recalled that power distance (strong power distance in Turkey and minimal in the United States) was found to be negatively related to communication and team building (Offerman & Hellmann, 1997). Turkish managers with strong power distance scored higher than their American counterparts on “communication and shared definition”. On the other hand, however, higher emphasis on “communication and shared definition” could simply reflect collectivist attitudes of the Turkish managers as well as communal tendencies that coincide with femininity. In Turkish society, where the interests of the group take precedence over the interest of the individual and where the group is the major source of identity, the importance of communication and shared values must be evident.

In this study, Turkish managers scored higher than American managers in terms of “control and responsibility.” In the context of Hofstede’s (1980) model, these results may be reflective of differences in terms of uncertainty avoidance across the two cultures. There is ample evidence characterizing the Turkish culture as being high in uncertainty avoidance (e.g., Gozlu 1993; Kozan 1993). As pointed out by Hofstede (1980), high uncertainty avoidance would reflect a greater need for structured hierarchies, formal work rules, and rigid rules of conduct in an effort to avoid/cope with uncertain situations. This centralized and autocratic notion is represented in the high importance Turkish managers assign to frequent checks and inspections, and quality being the prerogative of manufacturing. On the other hand, low uncertainty avoidance for the American managers imply less rigid rules and more participative management styles. This may ex-

plain why American managers seem to view responsibility for quality to lie throughout the organization, not just the manufacturing department.

The “quality execution” factor, which was rated higher by Turkish managers reflects the implementation aspects for better quality (e.g., the importance of automation, better workmanship, and material quality). Higher ratings by Turkish managers as compared to American managers on this aspect may reflect the current level of industrialization in the two environments. Since the industrial revolution is relatively in its early stages in Turkey, managers in that environment may have attached tremendous importance to execution aspects such as automation and better workmanship. These types of production-oriented execution elements may be considered relatively less significant by American managers who may take these for granted (since the United States is further along the road of industrialization) and may be ascribing greater importance to aspects such as customer service.

#### 4. Conclusions

The primary aim of this study was to investigate the invariance of a model regarding managerial perceptions of quality across the United States and Turkey. Managers in the United States and Turkey responded to a questionnaire dealing with their companies’ approach to product quality. These data were used to test for differences between American and Turkish samples in terms of a previously established six-factor model of quality based on Yavas and Marcoulides’ (1996) work. This was accomplished by multi-sample analysis using structural equation modeling techniques and a series of mean comparison tests. Consistent with the rationalist approach, it was hypothesized that the same range of six factors would appear in both countries. Based on an alternative paradigm, the culturalist approach, it was also hypothesized that managers would emphasize different aspects of quality management in each country.

The results indicated that although American and Turkish samples did not differ in terms of how quality is conceptualized, there were some differences in terms of the importance of some quality aspects. The six-factor conceptualization of quality comprising communication and shared definition, quality execution, commitment, control and responsibility, current status, and quality measurement seemed to find support across both American and Turkish samples. However, Turkish managers seemed to rate aspects pertaining to communication and shared definition, quality execution, and quality control higher than their American counterparts.

This study indicates that compared to American managers, Turkish managers appear to have a higher level of commonality in the way management at different levels of the organization perceived quality. Thus, Turkish organizations may be characterized by better communication about the concept of quality throughout the organization. Turkish organizations also seem to assign greater importance to the role of manufacturing, and that of quality circles in the quality control process. Moreover, as compared to American managers, Turkish managers seem to place a greater emphasis on the role of better workmanship and automation in achieving superior quality. The results, however, show no significant differences between the American and Turkish samples in terms of how quality is measured, the levels of employee and management commitment to quality, and perception of current quality levels in the organization.

These findings indicate that a reconciliation between the rationalist and culturalist approach similar to that proposed by several other researchers is long over due. It appears that managers in both countries are familiar with a range of quality management tools and use them frequently and interchangeably; this may be due to the impact of globalization of business. However, managers sampled in our study tended to emphasize particular factors over and above others. Which factor will be emphasized will likely be dependent upon the cultural values prevalent in a given country. The results illustrate that managers across the United States and Turkey conceptualize quality similarly, but emphasize specific elements differently. This implies that managers involved in international business, while realizing the important role played by globalization and standardization, should also be aware that cultural differences will still play an important role in terms of differences in management practices in general, and quality management practices in particular.

There are some limitations to our study. First, we did not test the link between culture and managerial behavior directly. We simply inferred this relationship based on previous research (Hofstede, 1980). Similarly, there was no inclusion of other societal-level variables, such as measures of industrial development and technological level, which are factors that could potentially explain the variance in the model. We recognize that such societal-level variables are important and to the extent that they can be identified and operationalized, they may contribute to the predictive power of general theories. As such, future research should directly measure cultural values in each participating country in order to more rigorously test these linkages. Another limitation of the study is its implicit assumption that there exists a singular or monolithic culture in both the United States and Turkey. In reality, both countries are home to a wide range of ethnic

groups with notable variations in cultures. Turkey, for example, consists of two very distinct regions—the western developed region and the east, which is much more a prototypical developing country. Our data were collected from the western part of Turkey. The results of this study might have been different in eastern Turkey, which also suggests that we need much more fine-grained analyses of cultural differences. This point highlights a problem in the field – that we often under-emphasize regional differences and view the nation-state as Unitarian (Boyacigiller & Adler, 1997).

Nevertheless, this study represents an important step toward evaluating the generalizability of a model of quality management across different cultures. The study also bears both substantive and methodological implications for future cross-cultural business research. Even though our study did not include societal-level variables, we were able to show model stability across the countries investigated. If similar results are obtained in different national settings, eventual universal applicability might be supported. We therefore encourage further cross-cultural research directed at examining differences in quality management across many other cultures. Knowledge of quality management practices used by managers from different cultures will improve our understanding of managerial effectiveness and action, especially in work environments that are becoming increasingly diverse in terms of employees' social and cultural backgrounds. As global competition increases, managers from various countries will interact in the same marketplace. Our research suggests that managers share common ground with respect to some quality management related issues (e.g., quality management attitudes, concepts and practices) that may transcend national borders. Of course, some differences remain, and the source of these differences is likely to lie in the cultural context.

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