

**SERVICE QUALITY AND SATISFACTION AN INTERNATIONAL
COMPARISON OF PROFESSIONAL SERVICES PERCEPTIONS**

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Bios

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ABSTRACT

Purpose - This study examines the applicability of key measures of service quality and customer satisfaction in a cross-cultural setting, first establishing measurement equivalence and then investigating the impact of culture on these measures.

Design/Methodology - Using scenarios involving a visit to the dentist's office, respondents from Germany, Japan, and the U.S. participated in a 2 x 2 factorial experiment in which the authors manipulated both expectations (low/high) and service performance (low/high).

Findings - Regardless of expectations, when performance was low, the low-context respondents (U. S. and Germany) perceived lower quality than did the respondents from the high-context country (Japan), but gave higher quality ratings than did the Japanese respondents when the performance was high.

Practical Implications - The finding of this study highlight the necessity of considering culture when interpreting customer satisfaction ratings.

Originality/Value - This research adds credence to the paramount role culture plays in consumers' ratings of perceived service quality and customer satisfaction.

Keywords: service quality, customer satisfaction, culture

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INTRODUCTION

In the last decade, firms have come to realize that understanding, meeting and anticipating customer needs is probably the most important source of sustained competitive advantage for a firm (Vilares and Coelho, 2003). In-depth knowledge of how to satisfy customers is particularly important in industrialized countries, such as Germany, Japan, and the United States, where firms are struggling to compete with firms who are outsourcing services to low cost areas. Excellent customer service may indeed be the best answer to countering the increasing trend of outsourcing.

Thus, it is not surprising that customer satisfaction has become an important focus of corporate strategy (Homburg, Koschate and Hoyer, 2005). In fact, research has shown that there is a positive relationship between customer satisfaction and financial performance (Anderson, Fornell and Rust, 1997). In a recent study by Hellier, et al., (2003), the main factors shown to influence brand preference and customer repurchase intention were customer satisfaction and perceived value. However, a significant challenge to firms may be learning how to satisfy customers globally. Even though markets have globalized, the global consumer may be, at least in part, a myth (Horn and Shy, 1996). Firms should not assume that the individual consumers who comprise these global markets are identical in terms of consumptive objectives and behaviors. Hence, to remain competitive in a global environment, firms must learn how to develop not only products, but also services, which will satisfy a highly diverse customer base.

In fact, the role of services in the world economy has increased significantly within the last decade, particularly in developed nations. The shifting of the economy in industrialized countries from goods to services is considered one of the most important long-term trends in the

business world today (Jiang and Rosenbloom, 2005). It can be said that in the economically developed world, services have replaced goods as the building blocks of employment and gross national product (Bowen and Hallowell, 2002). For example, the service sector is one of the fastest growing sectors in the United States today, accounting for over 75% of the increase in the GNP in the last decade. Thus, as competition among companies grows, the ability to choose from different suppliers gives customers greater power, and challenges service providers to do their very best to satisfy their needs and wants (Porter, 1998). However, as companies span national borders, they are challenged to create a marketing orientation which will be successful across a myriad of national cultures (Nakata and Sivakumar, 2001). As firms market their products and services internationally, how generalizable are measures of service quality and customer satisfaction developed primarily in the United States? Such measures may indeed be less applicable and less meaningful in other nations, which would consequently render the results to be less than optimal (Laroche et al. 2004). Hence, the consideration of cultural differences and their impact is a requisite for any effective marketing campaign, including the measuring of service quality and customer satisfaction.

Thus, the objectives of this study are twofold. The first goal is methodological in perspective: to determine if key measures of service quality and customer satisfaction are indeed applicable in a cross-cultural comparison. If measurement equivalence can be established, we can then move on to our second research objective: to investigate the influence of national culture on service quality perceptions and customer satisfaction. National culture was selected as the unit of analysis because the cultural grouping in such research has typically been defined by national or geopolitical boundaries.

To achieve the objectives of this study, respondents from Germany, Japan, and the United States were chosen as the comparative study groups. These countries are all industrialized nations, as well as competitors, and represent important markets for each other. Additionally, significant cultural differences can be found among the groups, which is important in realizing the research objectives.

SERVICE QUALITY

In the seminal work of Gronroos (1982, 37), service quality is defined as “the outcome of an evaluation process where the consumer compares his expectations with the service he perceived he has received.” Since that time, a voluminous amount of research has been conducted on the topic, principally due to its role as an input to customer satisfaction (Oliver, 1996) and an indicator of organizational performance (Lewis and Mitchell, 1990). Companies that have goods and services that are perceived as being of high quality typically have greater market share, higher return on investment, and higher asset turnover than firms which have goods and services perceived as being of low quality (Kim, Lee and Yun, 2004). In fact, in today’s fiercely competitive global market, more than half of all corporate training dollars are spent on service quality issues (Babakus, Bienstock and Van Scotter, 2004). Also, in this technological age, where instant price comparisons on the web are available at the click of a mouse, non-price competitive advantages, such as service quality, become even more critical in retaining and attracting customers (Jiang and Rosenbloom, 2005).

The construct of service quality is defined as the difference between expected service and perceived service (Parasuraman, Zeithaml and Berry, 1985). Perceived service quality is the consumer’s judgment about the overall excellence or superiority of a service (Zeithaml, 1988). The fact that this construct involves perception means that the above mentioned judgement of the

consumer may differ among individuals experiencing the same situation. The manner in which an individual perceives an event, including a service encounter, is based on the experiences and cultural framework that the person brings to that event. Thus, it would be expected that perceptions of service quality would differ across cultures.

Service quality is more difficult for consumers to evaluate than product quality; this is due to a lack of tangible evidence associated with the service (Hong and Goo, 2004). This is particularly true for professional services because they are very people-based, which increases the level of variability in service quality. Additionally, Eskildsen, et al., (2004) found that although service quality has a significant impact on customer satisfaction and customer loyalty across all industries, it is even more important for professional services. For these reasons, a professional service, a dental appointment, was selected as the service encounter to be examined in this study.

In the review of service quality literature, much research has focused on how perceptions of service quality should be measured (Brady and Cronin, 2001; Parasuraman, 1994; Brown, Churchill and Peter, 1993; Teas, 1993). Most research stems from the 1985 work of Parasuraman, Zeithaml and Berry when they applied gap analysis to the area of services and came up with the idea of “perceptions gaps,” the gaps that occur between the expectations of service quality which will be provided and the actual service quality as it is perceived by the customer. From this gap model, which had its roots in the disconfirmation paradigm of Churchill and Surprenant (1982), emerged the well-known measurement model SERVQUAL (Parasuraman, Zeithaml and Berry, 1988). This multi-item scale includes the five dimensions of tangibles (physical facilities and the appearance of personnel), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and

provide prompt service), assurance (employee knowledge base which induces customer trust and confidence) and empathy (caring and individualized attention provided to customers by the service providers). SERVQUAL has been used successfully across many industries, such as banking (Mukherjee and Nath, 2005), real estate (Dabholkar and Overby, 2005), and health care (Choi et al., 2005), to name a few. Indeed, many researchers believe that its adaptability is one of its strengths (Weekes, Scott and Tidwell, 1996). However, there are some (Teas, 1993) who have raised concerns as to its validity, as well as definitional concerns related to the construct of expectations. In fact, Cronin and Taylor (1992) offered theoretical justification for discarding the expectations section of SERVQUAL and Brady, Cronin and Brand (2002) have developed an alternative measurement model, SERVPERF, which focuses only on performance. Since then, some researchers (Vilares and Coelho, 2003) have found that expectations have no direct impact on customer satisfaction, which yields support for the SERVPERF model.

CUSTOMER SATISFACTION

Customer satisfaction should be the ultimate goal of all firms, because both theoretical and empirical research link a firm's business performance to the satisfaction of its customers (Morgan, Anderson and Mittal, 2005). In fact, findings in a 2005 study by Homburg, Koschate and Hoyer revealed the existence of a strong, positive impact of customer satisfaction on willingness to pay. Customers who have been very satisfied with a service in the past will not only seek out that service provider in the future, but will also be very willing to pay a premium price for that service.

Satisfaction is the consumer's response to the evaluation of the perceived discrepancy between prior expectations and actual performance (Tse and Wilton, 1998), with expectations viewed as predictions about what is likely to happen (Parasuraman, Zeithaml and Berry, 1988).

Satisfaction or dissatisfaction is not inherent in the product or service but, instead, is the consumer's perceptions of the attributes of the product or service as they relate to that individual (Boschoff and Gray, 2004). Hence, satisfaction is idiosyncratic and as a construct, emerges from the interaction of perceptual interpretations of expectations of that service. Thus, different consumers will express varying levels of satisfaction for the same experience or service encounter. Because culture is the lens which filters the perceptions of individuals, one can expect the role of culture to be significant in customer satisfaction ratings.

Satisfaction is viewed by many researchers as having both an affective and cognitive dimension (Oliver, 1996). This recognition of its affective component is important, because attitudes and values greatly affect consumer behavior. It is also the affective dimension where the influence of culture is most in evidence. Bitner and Hubbert (1994) and Voss and Parasuraman (1995) also make the distinction between cumulative satisfaction and transaction-specific satisfaction, which pertains to a specific service encounter. Transaction-specific satisfaction is said to capture the complex psychological reactions that customers have to a product's or service provider's performance for a given time period (Oliver, 1997). In this study, satisfaction will be viewed as a separate construct from service quality and will be restricted to transaction-specific judgments (Cronin and Taylor, 1992).

THE INFLUENCE OF CULTURE ON CONSUMER BEHAVIOR

Culture is an integrated pattern of behavior and the distinctive way of life of a people (Terpstra, Sarathy and Russow, 2006). It is everything that people have, think and do as members of their society (Ferraro, 2006). It is transmitted through the process of learning and interacting with one's environment. It can be thought of as the storehouse of knowledge of one's society, which in this study would be one's nation, since national culture is the unit of analysis.

Hofstede (1980) defined national culture as the collective programming of the mind which distinguishes the members of one group or category from another. Clark (1990) suggests that national culture is to culture what the GNP is to economic variables. National character, then, outlines and encompasses the cultural orientations of a country. It is the breadth of national culture which enables researchers to develop hypotheses and draw conclusions over a wide range of national, aggregate-level behavior.

A people's culture lives in its motivations, its institutions and its self image. It finds expression in a group's distinctive pattern of behavior; it provides our "reality world." Cultural values are seen as the "building blocks of culture" (Hofstede, 1980). They are related to customer motivation via their overall function as an expression of human needs, serving as standards to guide decisions and actions (Rokeach, 1973). Thus, depending on the configuration of values in a particular culture, certain types of behavior would be more likely than others. In fact, Sheth, Newman and Gross (1991) suggest that market choice is a function of an individual's multiple values making differential contributions in any given choice situation. Subsequent research has proven this to be true in that culture has been shown to influence practically all facets of marketing efforts including advertising (Choi and Miracle, 2004, Zhou and Belk, 2004), product choice (Watson and Wright, 2000), public relations (Lim, Goh and Sriramesh, 2005), sales promotions (Kwok and Uncles, 2005), market entry mode (Brothers and Brothers, 2001), and online purchasing (Ueltschy, Krampf and Yannopoulos, 2004).

As the unit of analysis in this study, the concept of national culture has been classified in various ways, but the most widely used and accepted in the fields of marketing and international business are Hall's (1977) contextual paradigm and Hofstede's (1980) and Hofstede and Bond's (1988) cultural dimensions. In this study, Hall's paradigm of low context and high context

cultures will be used to investigate the influence of culture on service quality perceptions and customer satisfaction in three countries: Germany, Japan, and the United States. Differences in service quality perceptions can be expected because culture is the lens through which perceptions are filtered. Furthermore, perceived performance has been shown to directly influence customer satisfaction and perceived service quality (Halstead, Hartman and Schmidt, 1994).

These three countries were selected for this cross-cultural comparison, because Hall (1977) views contextual variation occurring along a continuum, with Germany at the extreme of the low-context countries and Japan at the other extreme of the high-context countries. The United States is classified as a low-context country, which falls closer to the middle of the continuum. In low-context cultures, meaning is explicit and frankness and forthrightness are valued in these societies. In high-context cultures, meaning is implicit and often comes from the context in which something is said. Nonverbal communication and visual cues are important, as are the setting and the status of the individuals involved.

The person from a low-context country which attempts to treat everyone equally will not be well received in a high-context country, where status is to be acknowledged and respected. In low-context countries, business comes first and relationships will develop over time. In high-context countries, the building of relationships and a feeling of trust must be established before any business will be conducted. Individual achievement and individual welfare are paramount in low-context countries such as Germany and the United States; whereas, the welfare of the group and maintaining group harmony are most important in high-context countries, such as Japan. The frank comment or forthright assessment so valued in low-context countries may indeed be viewed as rude in a high-context country, particularly if it causes one of the group to “lose face.”

The Confucian influences can be seen in the Asian high-context countries (Hofstede and Bond, 1988) where the values of self-control, discipline, self-sacrifice and harmony are molded into the culture, so that any type of confrontation is frowned upon.

Thus, one can expect to see the influence of national culture among these three study groups, as has been noted in previous research. Shiu and Dawson (2004) noted that national culture had a significant impact on the differences noted between German and Japanese consumers in relation to online purchasing. Pornpitakpan (2004) also found cross-cultural differences between American and German respondents in relation to the effect of ad repetition and ad size. Ferley, Lea and Watson (1999) found significant differences between Canadian and U.S. consumers in terms of product-usage patterns. Taylor, Franke and Maynard (2000) examined the behavior of Japanese consumers compared to U. S. consumers with regard to their attitudes toward telemarketing. Because Japan is a high-context country where relationships come before business, the Japanese consumers perceived the telemarketing calls from an unknown source as even more rude and intrusive than U. S. consumers did. Finally, Voss et al. (2004) investigated the influence of culture on service quality and customer satisfaction among U.S. and U.K. respondents and found that customer reaction to good service is similar; however, U.K. and U.S. customers tend to respond significantly different to poor service encounters based on cultural norms. Thus, culture is a potentially powerful predictor of consumer behavior and attitude and as such, its impact on measures of customer satisfaction and service quality will be examined in this study.

RESEARCH OBJECTIVES AND HYPOTHESES

The objectives of this study are: (1) to evaluate if measures of satisfaction and service quality are invariant among German, Japanese, and U.S. respondents and (2) if these measures

are invariant, to evaluate the impact of culture on these measures.

More specifically, the hypotheses to be tested are as follows:

Hypothesis 1: The instruments used to measure customer satisfaction are invariant among German, Japanese, and U.S. respondents.

Hypothesis 2: The instruments used to measure service quality are invariant among German, Japanese, and U.S. respondents.

The universality of these scales will be tested using these two hypotheses. This is important because direct comparisons assume that the ratings given by respondents are comparable; i.e. utilizing the same psychological metric (Maurer, Raju, and Collins, 1998). This universality of scales is paramount because without it, differences in respondent ratings might not be true differences at all, but rather differences in the way the scale was interpreted.

Hypothesis 3: In high-performance service encounters, the respondents from the low-context countries (Germany and the U.S.) will express significantly higher customer satisfaction than the respondents from the high-context country (Japan).

Hypothesis 4: In high-performance service encounters, the respondents from the low-context countries (Germany and the U.S.) will express higher perceived service quality than the high-context (Japanese) respondents.

The reasoning behind these two hypotheses is twofold. Because Japanese respondents are accustomed to and expect superior service quality, they will not perceive high performance as being as exceptional as might be expected. Secondly, and more importantly, because the Japanese are taught to be serious and not to express emotions (Chow et al., 1997), they will refrain from choosing the extremely high ratings.

Hypothesis 5: In low performance service encounters, respondents from the low-context countries (Germany and the United States) will express significantly lower customer satisfaction than respondents in the high-context culture (Japan).

Hypothesis 6: In low performance service encounters, respondents from the low-context countries (Germany and the United States) will perceive significantly lower service quality than the high-context country (Japan).

These two hypotheses are based on the idea that even though Japan is known for its superior service quality, its respondents will express higher customer satisfaction and perceived service quality, because they will not want to disrupt group harmony. In contrast, the respondents from the low-context countries will express lower customer satisfaction and perceived service quality in situations where performance is low, because these cultures value forthrightness and “speaking one’s mind,” so they will express their true feelings.

METHODOLOGY

Experimental Design

To address the research objectives, a simulation methodology was used in which scenarios were created and presented to potential respondents. The respondents were asked to imagine themselves in the situation described and then report how they would “feel” about the service encounter using validated measures of service quality and customer satisfaction. Scenarios have been widely used and well-accepted in satisfaction research (Bitner, 1992), because they permit exploration of complex constructs which are not readily operationalized in the real world.

For this methodology to be effective, the scenarios must be realistic and ones with which the respondents are familiar. A professional service was selected, because although service quality has a significant impact on customer satisfaction across all industries, it is even more important for professional services (Eskildsen et al., 2004). A dental office setting was chosen because the majority of students in industrialized countries, such as Germany, Japan, and the

U. S., have visited a dental office; whereas, many students have had no occasion to make use of other professional services such as accounting services or financial planning services. A question pertaining to the frequency of a respondent's visits to a dental office was included in the questionnaire so that any subjects unfamiliar with a dental setting could be eliminated. To ensure that the respondents would perceive the scenarios as realistic, they were created in conjunction with two different dentists to ensure their authenticity (for the scenarios, see Appendices 1 and 2), and pretested with 64 subjects from the three study groups.

The expectation scenarios (see Appendix 1) used to create both low and high expectations were created to include not only the service outcome, but also the service process. Some researchers (Dabholkar and Overby, 2005) view that the service process is indeed the missing link in many studies between the concepts of service quality and customer satisfaction. The scenarios used to create high and low expectations in this study include the actions of the staff in the dental office prior to the patient seeing the dentist, as well as physical descriptions of the dentist facility and the neighborhood in which it is located. Much evidence exists to support the inclusion of the service environment in the overall perception of service quality (Reimer and Kuehn, 2005). In a study done by Babin et al. (2005) on restaurant patronage, findings suggested that managers should place increased emphasis on the physical environment, as it clearly plays a role in creating positive consumer outcomes. Scenarios that described the actual dental visit (low/high performance) followed (see Appendix 2), creating a 2x2 full-factorial between-subjects experimental design (see Figure 1). Each of the four treatment cells ($T_1 - T_4$) represent real-life situations which can transpire in any dental setting. The respondents were randomly assigned to treatments, with approximately 155 per treatment, with an equal distribution of respondents from the three countries assigned to each treatment. Each respondent was asked to

evaluate the service encounter presented using validated scales for measuring service quality and customer satisfaction.

Sample

The data for this study (n= 625) was collected from a convenience sample of undergraduate business students in the U.S. Midwest; Yokohama, Japan; and Osnabruck, Germany. It was deemed that university students were appropriate for this study because they are more likely to be homogeneous on certain demographic characteristics; they allow for more precise predictions and provide a stronger test of theory (Calder, Phillips, and Tybout, 1981); and they represent the upwardly mobile middle and upper classes, which are the target markets of most corporations that want to do business in foreign countries. National cultures are extremely stable over time (Hofstede, 2001), with this stability being explained by the reinforcement of cultural patterns by the institutions that themselves are products of dominant cultural value systems (Kowk and Tadesse, 2006). Thus, to use respondents from the younger generation, college students, in no way jeopardizes the representativeness of the samples or the validity of the results. Many international studies have successfully used college students as subjects, a few recent studies include Church et al., (2003), who used students in the United States and Mexico to test for various cultural differences in implicit trait theories, and Roccato and Ricolfi (2005) who used college students in Italy and the U. S. to test for the correlation between authoritarianism and social dominance orientation. To lend further credence to this fact, Gallagher, Parsons and Foster (2001) replicated a study on advertising effectiveness, which had originally used a sample of college students, with adult non-student respondents and found no statistical differences in the results. Similarly, Smith, Bausch and Kettman (2004) found that the same set of factors of interest were uncovered with no statistical differences using six

independent student samples as were in the general population. Finally, because most students are familiar with the professional service chosen in this research, their participation does not compromise the validity of the study. Of the U.S. sample (238), 97.5% were 18 to 29 years of age; of the Japanese sample (n=229), 98.3% were 18 to 29 years of age; and for the German sample (n=158) 94.4% were 18 to 29 years of age. Approximately, 46%, 28% and 55% of respondents were female in the U. S., Japanese and German samples respectively.

Measurement

The questionnaire was first developed in English and then translated into Japanese by the researcher from the respective country and a bilingual graduate student to ensure that all idioms and local expressions were included and properly stated. The Japanese version was then back-translated by another bilingual graduate student who was familiar with the subject content. For the German version, the questionnaire was translated into German by a bilingual graduate student. When deemed necessary, consultation via the phone with dental practices was done to ensure that the original meaning of the questionnaire was respected. The complete German version of the questionnaire was then back-translated into English by a native speaker and English professor and differences were dealt with by consultation with a second English professor. The final version was then pretested.

Thirteen items appropriate for use with the scenario of a dentist setting from the performance-only SERVPERF inventory of measures were selected. The seven-point questions were anchored by 1= “strongly disagree” and 7 = “strongly agree.” The first measure of customer satisfaction was on a seven-point scale: “With respect to the quality of this dental practice, I feel terrible/unhappy/mostly dissatisfied/mixed/mostly satisfied/pleased/delighted”. (Spreng, Mackenzie, and Olshavky, 1996). The second measure of satisfaction (Crosby and

Stephens, 1987) was a four item, seven-point semantic differential ratings scale with Cronbach's alphas of more than .96, which indicates high reliability: "With respect to the quality of dental care I have just received, I am: disgusted/contented, dissatisfied/satisfied, displeased/pleased, I didn't like it at all/I liked it very much." All five items had affective components that are usually associated with the measurement of consumer satisfaction (Oliver 1996). (See Figure 2 for complete list of items.)

ANALYSIS AND RESULTS

Manipulation Checks

To ascertain that the respondents who received different experimental treatments perceived the desired effects, manipulation checks were performed on both the expectation and the performance scenarios. A seven-point question was used to assess respondents' expectations: "Overall, your expectations of having the cavity filled correctly are low/high." Another seven-point question was used to check the performance scenarios: "Overall, how would you rate the performance of the dentist?" (poor/excellent). Using t-tests, we noted significant mean differences at $p < .001$ between respondents assigned to the high-expectations (6.27) and low-expectations (3.28) scenarios ($t = 26.7$) and between the high-performance (5.72) and low-performance (2.35) scenarios ($t = 33.0$).

Reliability Check

The reliability analyses performed on the 13 measures of service quality yielded a Cronbach alpha of .98 for the U.S. sample and .97 for the Japanese and German samples. Cronbach alphas for the measure of service satisfaction were .99, .98, and .99 for the U. S., Japanese and German samples, respectively. Given the differences in gender composition across

the three country samples, a series of t-tests to assess mean gender differences with respect to the variables under analysis was conducted. No significant gender differences were detected.

Confirmatory Factor Analyses

The EQS confirmatory factor analysis (CFA) procedure was used to test the invariance of the measurement instruments and the factorial structure. The model was estimated with the reweighted generalized least squares (ERLS) method. An examination of the data revealed five multivariate outliers in the U.S. and Japanese samples and 2 in the German sample. Removal of the twelve cases resulted in sample sizes of 238, 229 and 158 respectively. It was hypothesized a priori that the 13 items measuring the quality construct would load on one factor, that the 5 items measuring the satisfaction construct would load on another factor, and that quality would be an antecedent to satisfaction. The service quality-satisfaction relationship has been the subject of much debate, but Brady, Cronin, and Brand's (2002) study has lent further support to this causal order. To assess the group invariance of the two constructs, we followed the steps advocated by Steenkamp and Baumgartner (1998), that is, when the goal of a study is to conduct a comparison of means, configural invariance must be tested first to determine if the factorial structure of the constructs is similar across samples; and next, metric (factor loadings) and scalar (item intercepts) invariance must be determined. This procedure is recommended because of differences in the interpretation of content and/or endorsement of particular items; item measurements and intercepts may not be equivalent across cultures.

In all the subsequent analyses, practical and statistical considerations guided the model fitting. Given the known sample-size dependency of the χ^2 statistics, the statistical indexes of choice for assessing model fit were the comparative fit index (CFI), χ^2 /degrees of freedom, and the RMSEA. A ratio of χ^2 to degrees of freedom that ranges from 1.00 to 5.00 and a CFI value

greater than .90 both indicate an acceptable fit to the data (Bentler, 1995). RMSEA's values less than .05 are indicative of close fit and values up to .08 of reasonable fit (Browne and Cudeck, 1993). Ill-fitting parameters were identified by means of the Lagrange Multiplier (LM) Test.

The hypothesized model for each of the three groups showed a satisfactory fit of the data; however, an error covariance involving Q48 and Q49 yielded large χ^2 values in all three samples. When respecified as a freely estimated parameter, an improvement in overall model fit was noticeable in the three samples. Fit statistics for the three baseline models are presented in Table 1, and Figure 2 shows a summary of the model estimates for the three groups.

[Insert Table 1 and Figure 2 about here]

Convergent validity was supported, as all the factor loadings are high and are statistically significant ($p < .01$). Furthermore, the average variance captured by each of the constructs was greater than .50, indicating that the variance due to measurement error is smaller than the variance captured by the construct (Fornell and Larcker, 1981). For the quality construct, the average variance extracted was .72, .82, and .78, for the Japanese, U.S. and German samples respectively; likewise, for the satisfaction construct, the average variance extracted amounted to .90, .94, and .93, for the Japanese, U.S. and German samples respectively.

Discriminant validity was assessed for the quality and satisfaction constructs by fixing at 1 the correlation between these two latent factors in the model, as suggested by Fornell and Larcker (1981) and Anderson and Gerbing, (1988). Looking at the differences in χ^2 in Table 1 for the three samples, the constrained model produced a poor fit compared to the model in which the correlation was unconstrained. In all samples, significant increases in χ^2 were noted. Thus, there is evidence of discriminant validity between the two constructs (see Table 2).

[Insert Table 2 about here]

Configural Invariance. For this test, no equality constraints are included and the model serves as a useful baseline model to which more restrictive models can be compared. The test of configural invariance yielded a good fit: χ^2/dof (784.170/399 = 1.96, CFI = .992, and RMSEA = .039) which indicates the same factor pattern across the three countries and that all factor loadings are significant.

Metric Invariance. Based on the final model for each group, we tested for metric invariance by constraining all factor loadings to be equal across groups in the following order Japan, U.S., and Germany as groups 1, 2,3 respectively, and then we compared the model in a simultaneous analysis of the data. We based judgment of replicability on two criteria: (1) goodness-of-fit of the constrained model and (2) probability level of the equality constraints as determined by the LM test (in which $p < .05$ is untenable). The result of this analysis revealed a good fit to the three-group constrained model: CFI = .992 , χ^2/dof (836/431) = 1.94. However, we found three constraints to be untenable between groups 1 and 2 (Q41 on F2, Q55 on F1 and Q51 on F1) and one constraint between groups 1 and 3 (Q59 on F1). Releasing these constraints resulted in a model with two untenable constraints between groups 1 and 3 (Q51 on F1, and Q53 on F1). Releasing these constraints between groups 1 and 3 produced a satisfactory measurement model that was partially metric invariant across the three culture groups with χ^2/dof (796/425) = 1.87, CFI=.992 and RMSEA=.038. The difference in χ^2 between this model and the configural model was 12 with 26 degrees of freedom ($p > .10$) which indicates that the fit of this model is not significantly worse than that of the configural model. Thus partial metric invariance was supported. Table 3 summarizes the metric constraints released.

[Insert Table 3 about here]

Scalar Invariance. In the same manner as above, we tested the invariance of intercepts by concomitantly constraining the intercepts of all invariant item measurements across groups. The results from this run yielded χ^2/dof (961.100/452) = 2.13, CFI = .994 and RMSEA = .043. Ten intercepts across some groups showed clearly demarcated high LM χ^2 values. Releasing these ten constraints produced a model in which one more constraint had to be released. The final model yielded a χ^2/dof (816/441) = 1.85, a CFI = .995 and a RMSEA of .037. The change in χ^2 (32) and 42 degrees of freedom ($p > .10$) indicated that this model did not differ significantly from the configural model, in support of partial scalar invariance. Table 3 summarizes the scalar constraints released.

These tests supported our assumption of partial invariance. Of the 17 non-invariant parameters, 10 involved inequivalencies between the Japanese and German samples, and 7 involved inequivalencies between the U.S. and German samples. Thus, the majority of noninvariant parameters (17) involved Germany and Japan. Thus, H₁ and H₂ were only partially supported.

We also tested the equivalence of the service quality → satisfaction structural path by concomitantly constraining this parameter and all invariant item measurements across groups. The path was found to be noninvariant between Japan and Germany. Unstandardized coefficients for the structural paths were .964, .948, and 1.227 for the Japanese, U.S., and German samples respectively. For the German respondents, the model accounted for 89% of the variance in satisfaction while for the Japanese, and U.S. respondents it accounted for 73% and 77% respectively.

Comparison of Means

Next, comparisons were conducted between the three study groups' (German, Japanese, and U. S.) assessments of satisfaction and service quality, given the same service situations. On the basis of the partial measurement invariance results we obtained, we conducted latent means comparisons in which the German sample was the "reference group" (Byrne 1994, 201, Bentler 1995) for each treatment. Table 4 shows the results of the latent mean comparisons for each treatment as well as the unweighted means for the three fully invariant measures of service quality (Q50, Q54, Q56) and service satisfaction (Q40, Q42, Q44). In addition, using Anova, pairwise comparisons between the German and the U.S. samples and the German and the Japanese samples were conducted using the three invariant measures of quality and the three invariant measures of satisfaction. We calculated unweighted means for the invariant measures of quality and satisfaction and tested for mean differences between Germany and the other two countries. To maintain the overall Type I error level at $\alpha=.05$, each comparison was tested at $\alpha=.025$ using the Bonferroni adjustment.

[Insert Table 4 about here]

As can be seen in Table 4, significant differences were noted between Japan, the high context country, and U. S. and Germany (low-context countries) in customer satisfaction expressed when performance was high (T_2 and T_4). The low-context countries expressed significantly higher customer satisfaction than the high-context country, Japan; thus, H_3 is supported. Similarly, H_4 is supported because Germany and the United States perceived significantly higher service quality in service encounters where performance was high (T_2 and T_4) than did Japan. When looking at the results for service encounters where performance was low (T_1 and T_3), significant differences are noted between Japan (the high-context country) and

the U. S. and Germany (low-context countries), only when expectations are high but performance is low, with Japan expressing higher customer satisfaction; thus, H₅ is only partially supported. H₆ is supported because regardless of expectations, respondents from Japan perceived higher service quality than did those from the low-context countries (U. S. and Germany).

DISCUSSION AND MANAGERIAL IMPLICATIONS

The findings in this study, like the objectives, are twofold. First, only partial invariance was found, with only some of the measures of customer satisfaction and service quality being fully invariant across the four groups. This points out that some measures of both customer satisfaction and service quality may be nonequivalent across cultures, which would limit their usage across borders. When measurement scales are created in one country and then translated for use in another, the interpretation and connotation of certain terms may negatively impact their applicability.

Secondly, the results of this study lend further credence to the idea that contextual variation between countries definitely influences responses on measures of customer satisfaction and service quality. As anticipated, the responses of the German and U. S. respondents were most similar to each other, in that they are both low-context countries, and most different from the responses of the Japanese (high-context).

Specifically, when performance was high, regardless of expectations, the low-context countries (U. S. and Germany) expressed significantly higher customer satisfaction and perceived service quality to be higher also. This may have been true because Japanese service standards are among the highest in the world, so good performance is expected. Thus, when performance is high, it may not be unusually superior, or perceived as so by the Japanese respondents, so that they might not give it their highest rating. Secondly, Japanese grow up in a

culture where emotions are not often expressed (Ferraro, 2006), where they are taught to be serious and self-sacrificing (Chow, et al., 1997), so to choose the highest rating may seem a bit emotional to them. “Japan is a tight culture. People are often afraid that they will act inappropriately and be criticized,” (Triandis, 2004, 92). To show emotions is frowned upon in Japan. Bang et al., (2005) found that Asian commercials tend to avoid emotions also and focus on rational, cognitive appeals using cues relating to reliability and assurance. Low-context countries, on the other hand, freely express their emotions and say exactly what they think and feel (Hall, 1977). Also, in the dental scenario where expectations were low, but performance was actually high, a possible explanation for why the Japanese expressed lower perceived service quality and lower customer satisfaction may be because in this scenario, the dental office was described as located in an older part of town with well-worn carpet and furniture. The setting or context in which an encounter occurs is said to be more important to those who are part of a high-context culture (Hall, 1977). For example, Hamburg, Kuester, Beutin and Menon (2005) found that the perceptions of benefits and their value to customers is significantly influenced by national culture. This concurs with the work of Malhotra et al., (2005) who found that Asian consumers emphasized different dimensions of service quality than did U. S. consumers. It also lends credence to the work of Winstead (1997), who found that Japanese consumers in a restaurant setting keyed in on different dimensions than did U. S. consumers when forming their evaluations of service quality. Perhaps the physical appearance of the dental office is valued more by Japanese consumers than by those in the other study groups. Alternatively, it may be simply explained by the appraisal theory (Roseman, 1991) which states that differences in attitudes and emotions result from the various ways in which people assess the situation or

environment. This could certainly come into play with customer satisfaction, since it is recognized as having both affective and cognitive components (Oliver, 1996).

In the service situations where performance was low, but expectations were high, the German respondents (low-context culture) expressed significantly lower customer satisfaction than did the Japanese respondents. Regardless of expectations, German and U. S. respondents perceived service quality as being lower than did the Japanese. The most plausible explanation is that because Japan is a high-context culture, keeping harmony in the group is very important to the Japanese. Japanese are known for taking others' needs and feelings more closely into account (Sun, Horn and Merritt, 2004). Characteristic of a high context culture, they are confrontation-avoiding (Kim, Pan and Park, 1998). According to the principle of wa, symbolized by a circle, harmony and peace come from loyalty, obedience and cooperation with other people (Catlin and White, 2001). It would go against the cultural norms of the Japanese society to strongly criticize another and cause that individual to "lose face." Thus, the Japanese respondent would be unlikely to choose the lowest satisfaction rating, even if he was truly disappointed with the product or service. For this reason, firms need to act with extreme caution when interpreting lack of dissatisfaction among Japanese consumers; it cannot be assumed that they are truly satisfied. Instead of confronting the firm or service provider by complaining or giving low satisfaction ratings on a survey, Japanese consumers are said to "vote with their feet." Their dissatisfaction will be manifested as a lack of repeat patronage. This is a dangerous situation for the service provider because they continue for quite some time to provide the same service, believing the Japanese consumers to be satisfied. Firms should work hard to create relationships with their Japanese customers, so that they as firms can come to understand whether they are truly meeting the needs and wants of their customers. After all, building relationships in a high-context culture,

such as Japan, should be a top priority and an ongoing process. A high-context culture is one in which feelings or emotions are not directly expressed and the true meaning of what is being said requires the building of a relationship over time (Blackwell, 1997). The respondents from Germany and the U. S. expressed lower satisfaction and rated the service quality as lower, because forthrightness is valued in low-context cultures (Hall, 1977). People in these countries do not hesitate in letting their true feelings be known, whether they are positive or negative. An alternate explanation is that “customers have a widely varying tolerance for poor service” (Barnes, King and Breen, 2004, 134).

Thus, companies which are operating in the global arena should be cautious when interpreting customer satisfaction surveys and not always take them at face value. They should consider the cultural differences associated with the various markets, particularly when using the results for making important decisions about product development, quality improvement interventions, compensation, promotion or retention of management.

Hence, the results of this study should indeed be of interest to firms, since these variables, service quality and customer satisfaction, are increasingly recognized as being sources of competitive advantage, primarily due to their influence on post-purchase behavior (Tam, 2004). Service firms, as well as their customers, are seeking a flawless performance on delivery of both core and supplemental service elements (Mattila and Cranage, 2005). Satisfied customers who feel they have received high quality service will not only be repeat customers, but are also willing to pay more in the future, which has important implications for setting prices (Homburg, Koschale, and Hoyer, 2005).

Some limitations of this study should be acknowledged, which can also be considered opportunities for future research. The focus of the study has been on Germany, Japan, and the

United States. It would be useful to replicate this study in other high-context countries in Latin America, as well as in Asia, to see if the differences encountered are a function of the Confucian influence in Asia or are generalizable across high-context countries in other parts of the world. Additionally, other types of professional services (i.e. legal services, financial services or architectural services) could be utilized in a study such as this, to ensure that such findings are indeed generalizable across industries. Lastly, future research could create different scenarios involving customer satisfaction with products, since product satisfaction has been noted as being different in nature than satisfaction with services (Eskildsen et al., 2004).

In conclusion, the findings of this study provide further support to the idea that national culture influences ratings on customer satisfaction and service quality. Although many countries are culturally diverse, such as the United States, national culture does appear to be an important factor to be considered when making marketing decisions, as well as when making personnel decisions such as which managers to reward, since customer satisfaction ratings often play a large role in these decisions. In a milieu which is becoming increasingly competitive, service quality and customer satisfaction take on paramount importance as drivers of customer loyalty, positive word-of-mouth, reduction in complaints, improved customer retention rates and ultimately greater performance and profitability for the firm (Yavas, Benkenstein and Stuhldrier, 2004).

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Appendix 1
Scenarios – Expectations
(Ueltschy and Krampf, 2001)

High

Imagine yourself in the following situation as though it were happening to you.

Two weeks ago you visited your dentist for your bi-annual teeth cleaning and check-up. At that time you were told that you had a cavity that needed to be filled and so you set-up an appointment to have this done. You are now returning to the dentist for this filling.

As you approach the dental office, you find a place to park near the office, which is located on the second floor of a modern brick building in a better suburb of town. You enter the office, close the door and have a seat. It is a large office with ten chairs, soft mauve carpeting, nicely coordinated wall paper, and soft pleasant music playing. As you sit down, you hear a high speed modern dental drill in the inner office.

Although it has been over a year since your last filling, you recall the situation well. You remembered that everything went very smoothly. There was no pain during the drilling of the tooth and you were in and out of the dental office in a short period of time. Overall, it was a very pleasant and satisfactory experience. You are anticipating a similar visit during this visit as well.

Low

Imagine yourself in the following situation as though it were happening to you.

For the past several years you have visited a dental practice on a regular basis. You have never heard of any major negative comments about the care provided. Your dentist focuses primarily on teeth cleaning and cavity repair. If problems become more complex, they refer patients to other practices in the area. The staff has been there for many years, but you have never gotten to know any of them very well. They always appear to be too busy and involved in their work. Included among the professional staff are several dentists, who also do teeth cleaning and tooth repair. You never know which dentist you will get when you arrive at the office. You like some better than others, but that choice is not possible in this very busy practice.

Two weeks ago you visited your dentist for your bi-annual teeth cleaning and check-up. At that time you were told that you had a cavity that needed to be filled and so you set-up an appointment to have this done. You are now returning to the dentist for this filling.

As you approach the dental office, you find a place to park directly in front of the office, which is on the first floor of an old frame home located in a declining area of town. You enter the office, close the door and have a seat. It is a small office with carpeting that is due for replacement and walls that are in need of paint. As you are seated, you hear an old-fashioned low-speed dental drill grinding away on another patient's tooth. While waiting for your appointment with the dentist, you pick up a Time magazine sitting on a table in a dimly lit waiting room and notice that it is dated June, 1994.

Although it has been over a year since your last filling was done in this office, you recall the situation quite well. Even though you had received novocaine, you could still feel some pain during the drilling of your tooth. The dentist appeared intent on completing the filling and paid little attention to the fact that you were in considerable pain. You also recall that once the filling was completed and the dentist shot some cold water into your mouth for you to rinse your mouth, there was considerable sensitivity to cold. Although the dentist realized this sensitivity, he did not comment on it. It took several weeks before this sensitivity went away.

At your last appointment when the dentist told you that you had a cavity, you started to wonder how large it was and whether a root canal or even removal of the tooth might be necessary. You think to yourself that you will be glad when this appointment is over.

Appendix 2
Scenarios - Performance
(Ueltschy and Krampf, 2001)

High

The receptionist immediately greets you by name and invites you to have a seat in the dental chair. The dentist promptly greets you and asks you how you are doing today. You indicate that you are fine, but will be glad when the appointment is over. After a brief review of your chart, he assures you that the filling is a very minor repair to the tooth and it is nothing to worry about. The first step of the procedure is to inject some Novocaine into the gums. You hardly feel the injection and the area around the tooth numbs quickly. The dentist then starts to drill with the high powered water injector drill. In a matter of a few minutes, he is done drilling and is ready to put the filling into the tooth. As he washes out your mouth with a spray of cold water, you notice no sensitivity to cold. As you are leaving the office, the dentist wishes you a good day and assures you that all will be O.K., but that if you have any problems, you should give him a call.

Low

As you browse through the magazine, the dentist's dental assistant walks past the door to the dental office several times, but does not acknowledge your presence. After ten minutes of waiting, you begin to wonder whether you had the correct date for your appointment, so you walk over to the reception window. The dental assistant acknowledges you by stating that she would be with you in a couple of minutes. After another five minutes, she asks you to come in and be seated in the dental chair.

As you are seated in the dental chair, the dentist promptly greets you and asks you how you're feeling today. You indicate that you are fine but will be glad when the appointment is over. He calmly says that it should not take long to put a new crown on the tooth. You quickly respond that you understood that only a filling was necessary. The dentist quickly realizes that he has the wrong chart. He quickly returns with the correct chart and begins to prepare you for your filling. The first step of the procedure is to inject some Novocaine into the gums. You feel the brief but fairly sharp pain of the injection, but have no problem dealing with that level of pain. The dentist then states that the injection did not go in properly and another injection should be necessary. This injection works properly and the dentist begins drilling. As he is drilling, the dental assistant comes over to him to ask him a question related to someone on the phone. Even though you received Novocaine, you can feel the pressure and considerable pain during the drilling. As he continues drilling, you feel the drill slip several times and brush up against another tooth. He completes the filling of the tooth and as he washes out your mouth, the cold water sends a pain through your entire body. The dentist says that is not a problem and it should go away in a few days.

You depart the office and return home.

Table 1
Summary of Fit Statistics for Baseline Models

Groups	CFI	RMSEA	χ^2/dof
1. Japan	.991	.066	264.104/133=1.99
2. U.S.	.991	.074	306.158/133=2.30
4. Germany	.994	.063	213.909/133=1.61

Table 2
Discriminant Validity of the Quality and Satisfaction Constructs

Sample	Unconstrained Model	Constrained Model	$\Delta\chi^2$	Δ Degrees of Freedom	Significance
Japan	264.105	346.201	82.096	1	$P<.001$
U.S.	306.157	566.437	260.280	1	$P<.001$
Germany	213.915	355.445	141.530	1	$P<.001$

Table 3
Summary Statistics for Non-Invariant Parameters Across the Three Culture Groups

Parameter	Factor Loadings Non-invariant Groups	Factor Intercepts Non-invariant Groups	Item Description
Factor 1 (Quality)			
V35Q48		1,2	The dental practice has up-to-date equipment.
V36Q49		1,2	The dental facilities are visually appealing.
V38Q51	1,2; 1,3		When you have a problem, the dental practice is sympathetic and reassuring.
V39Q52		1,3	The described dental practice keeps accurate records.
V40Q53	1,3		The dental practice tells patients exactly when and what services should be performed.
V42Q55	1,2	1,3	Employees in this dental practice are always willing to help patients.
V44Q57		1,2	You can trust the employees of this dental practice.
V45Q58		1,2; 1,3	The employees of the dental practice are polite.
V46Q59	1,3	1,2	A dental practice provides you with individual attention.
V47Q60		1,2	Employees in the dental practice understand your needs.
Factor 2 (Satisfaction)			
V28Q41	1,2	1,3	Quality of dental care: disgusted/contented.

V30Q43		1,2	Quality of dental care: displeased/pleased.
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Table 4
Comparison of Means by Treatments (within experimental cells)
Service Quality and Satisfaction

	Japan (J)	U.S. (U)	Germany (G)	Comparisons t-Value (significance) ^a	Latent Means Comparisons ^b
T₁ - Low Expectations/ Low Performance	(N= 60)	(N=56)	(N=39)		
Quality	2.99	2.25	2.47	-.82 (.416) 1.97 (.051)	N.S. J↑G (t=2.89)
Satisfaction	2.31	1.86	1.81	.241 (.810) 2.54 (.012)	N.S. N.S.
T₂ - Low Expectations/ High Performance	(N= 57)	(N= 63)	(N=40)		
Quality	4.47	5.59	5.23	1.33 (.187) -2.77 (.006)	N.S. J↓G (t=-3.37)
Satisfaction	4.05	5.85	5.65	.80 (.428) -6.30 (.000)	N.S. J↓G (t=-3.29)
T₃ - High Expectations/ Low Performance	(N= 56)	(N= 58)	(N=41)		
Quality	3.52	2.94	2.64	1.02 (.310) 2.97 (.003)	N.S. J↑G (t=3.48)
Satisfaction	2.84	2.22	1.67	2.22 (.028) 4.68 (.000)	U↑G (t=2.72) J↑G (t=2.03)
T₄ - High Expectations/ High Performance	(N= 56)	(N= 61)	(N=38)		
Quality	5.35	6.13	5.82	1.60 (.112) -2.47 (.015)	N.S. J↓G (t=-2.55)
Satisfaction	5.23	6.02	5.97	.31 (.760) -4.12 (.000)	N.S. J↓G (t=-2.73)

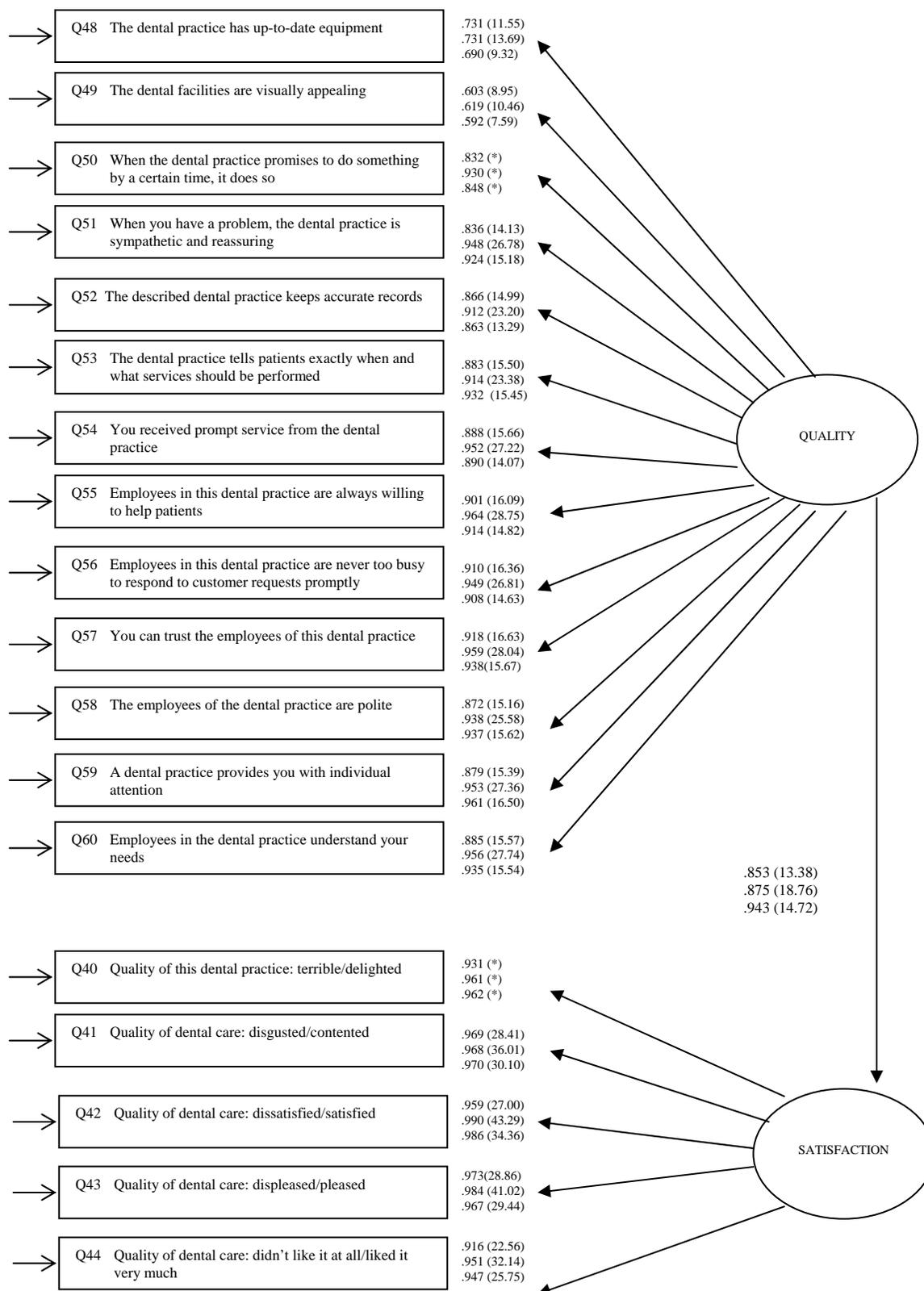
^{a)} Significant differences at $p < .05$ for two comparisons (1) United States and Germany, and (2) Japan and Germany.

^{b)} Germany used as a reference group.

Figure 1
Treatment Cells

		performance	
expectations	high	T ₁	T ₂
	low	T ₃	T ₄
		low	high

Figure 2
Final Model of Factorial Structure of Quality-Satisfaction
for the Japanese, U.S. and German Samples



*No t-values are reported because this item was used to set the metric for the construct.

Note: Results shown in the following order: Japanese, U.S., and German samples. Standardized coefficients are shown. Values in parentheses represent t-values. All parameters are statistically significant at $p < .01$.

