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The Reliability and Validity of the Turkish Version of the Service Quality Assessment Scale

Hizmet Kalitesi Değerlendirme Ölçeği'nin Türkçe Versiyonunun Güvenirliği ve Geçerliği

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Abstract

The purpose of this study is to test the reliability and validity of the Turkish version of the Service Quality Assessment Scale (SQAS). The participants of this study consist of 636 health-fitness club's members. The Confirmatory Factor Analysis (CFA) has been used to examine the factor structure of the SQAS instrument. It has been concluded that all of the goodness-of-fit indices of both the expectation and perception model were admissible, with the perception model being slightly better than the expectation model. The composite reliability and variance extracted has also been calculated for expectation and perception model. Analysis indicated that CR values are all above .70 for both expectation model and perception model.
Keywords: Reliability, validity, service quality, health-fitness clubs.

Öz

Bu çalışmanın amacı, Hizmet Kalitesi Değerlendirme Ölçeği'nin Türkçe versiyonunun geçerliği ve güvenirliğini test etmektir. Çalışmaya sağlık ve zindelik kulüplerine üye olan 636 kişi katılmıştır. Ölçeğin faktör yapısını incelemede, Doğrulayıcı Faktör Analizi (confirmatory factor analysis) yöntemi kullanılmıştır. Sonuç olarak, beklenen ve algılanan hizmet modelleri için elde edilen uyum indeksi değerleri kabul edilebilir düzeydedir ve algılanan hizmet modeli beklenen hizmet modeline göre biraz daha yüksek kabul edilebilirlik düzeyindedir. Beklenen ve algılanan hizmet modelleri için Bileşik Güvenirlik (Composite Reliability) ve Açıklanan Varyans (Variance Extracted) değerleri de hesaplanmıştır. Analiz sonuçları, hem beklenen hem de algılanan hizmet modelleri için tüm karışık güvenirlik değerlerinin .70'in üzerinde olduğunu göstermektedir.
Anahtar Sözcükler: Güvenirlik, geçerlik, hizmet kalitesi, sağlık ve zindelik kulüpleri.

Introduction

The interest in delivery of high quality services has been increasing in recent years as a partly result of today's highly competitive business environment. In other words, delivering high quality customer service is a policy indispensable to the overall success of an organization and to increase its strength in today's world. The service sector is undoubtedly essential for the economy since it accounts for 60 percent of the value added in the European Economic Community (Ghobadian, Speller and Jones, 1994). Similarly, the service sector is important for the United States economy as from 1900 to 1984 the percentage of the population employed in this sector increased from 30 % to 74 % (Cronin and Taylor, 1992).

Regarding the percentage value added to economy and employed population, doing something wrong increases the operating costs, which may vary between 30 and 40 percent. This is a huge percent for the service sector managers so they try to find the way of decreasing or elimination this waste by meeting customers' expectations (Ghobadian, Spellaer and Jones, 1994). Therefore, quality improvement is a fundamental concern for the success of many service organizations.

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An organization that wants more progress and profit obviously focuses its attention on service quality (Hadikoemoro, 2002). Organizations that provide high service quality as perceived by the customers tend to be the most profitable companies (Philip and Hazlett, 1997). The competitive position of an organization may change according to improvements in quality. Knowing that, not only the manufacturing sector but also the service sector makes an effort to find the way of improving their service qualities. An essential strategy in improving service quality is to measure the present service quality by assessing how far the service achieves customer satisfaction (Fan, Kwan and So, 1999).

In business literature, service is a performance, it happens through interaction between consumers and service providers. Silvestro, Johnston, Fitzgerald and Voss (1990) defined the service as an interaction period among the customer and service system and it includes contact personnel, equipment, service environments and also facilities. Service may be perceived differently from producer to producer or customer to customer. Recently, *service* has become associated with the word of quality and quality definitions have become sophisticated. The quality concept of "excellence" has now been largely superseded by definitions emphasizing production or delivery. Quality has been viewed as an assessment of what the company has rather than with what the company does. However, it is so difficult to define quality with just one definition; the underlying reason being that quality is now recognized as a multi-faceted concept (Hernon, 2002).

Service quality and customer satisfaction raised very little interest despite their long history until the mid-1980s. Both service marketing and service quality have not received a great deal of attention from researchers. To a small extent, through the work of Parasuraman, Zeithaml and Berry (1985) service quality has become a topic in a number of studies. However, there is no agreement upon the factors that affect consumer perceptions or measurement of service quality. In addition to this, there has been a deep concentration on developing tools for the assessment of service quality (Philip and Hazlett, 1997).

The issue of service quality and customer satisfaction has not received very much attention in the sports sector in the earlier period. However, nowadays in reaction to this highly competitive environment, sport organizations have recognized the importance of delivering quality service for success and survival in today's world. Over the past 15 to 20 years, more than a few people have recognised the value of performing a physical activity at least two or three times in a week for a health-life style. Hence, the number of sport and fitness centres has considerably increased in many countries (Papadimitriou and Kostantinos, 2000). It is the main reason of competition among the sport organisations. Having lots of alternatives, sport participants increased their expectations of quality in sport products and services (Howat, Crilley, Absler and Milne, 1996; Mawson, 1993). This suggests that sport service providers should provide better service or increase their quality of service to respond to the needs and expectations of customers who have other alternatives.

Although, researchers have agreed that service quality and customer satisfaction are the two significant constructs that have to be examined to gain competitive advantage over other organisations in the sector, sport management researchers have ignored the study of these two constructs and the relationship between them (Theodorakis, Kambitsis and Laios, 2001). Hence, there are a limited number of studies in sport literature related to service quality. It may occur due to the lack of instrument with good properties and practical application values and also the limited number of studies that have been carried out (Lam, 2000). In this situation, researchers concentrate on developing useable instruments to measure the service quality that is provided in health-fitness clubs.

Even if there is an increased attention to service quality and satisfaction in sport sciences in many countries, there is no study that has investigated sports service quality issues in Turkey. Consequently, there is a great need for the development of valid and reliable instruments for a service quality scale. This study seeks to test the reliability and validity of the Turkish version of the Service Quality Assessment (SQAS).

Method

Participants

The participants of this study included 338 males (53.1%) and 298 females (46.9%) who were randomly selected from eight different health-fitness clubs in Ankara. Health-fitness clubs were selected according to their size, programs, and number of member. Members in the sample were from different age groups, income groups and profession groups. Membership types were 72% individual (252 males and 206 females), family 26.9% (82 males and 89 females), and other 0.9% (3 males, 3 females).

Data Collection Instrument

SQAS is a 40-item inventory that was developed by Lam (2000) to measure service quality of health-fitness clubs (Appendix A). Although the SQAS was designed to evaluate the perceived service quality of health-fitness clubs, it was later extended to include both the expectation and perception scores. He developed the scale in four steps which are: (a) content validity stage, (b) pilot study, (c) the initial test administration and exploratory factor analysis and (d) confirmatory factor analysis. The Turkish form of the Service Quality Assessment Scale (SQAS-T) used in this study is a six-factor model with 40 items (Appendix B). These are: Staff (9 items), Program (7 items), Locker Room (5 items), Physical Facilities (7 items), Workout Facilities (6 items), and Child Care (6 items). Participants were asked to rate each item on a 7-point Likert scale ranging from 1 (least important) to 7 (most important). While the expected part of the instrument was introduced with a statement asking "How important is this to you"? The perception part was introduced by asking the participants "How's the club doing?"

Translation Procedures

For the translation of the instrument from English to Turkish following procedure was carried out: 3 specialists in English linguistics and the researcher translated SQAS into Turkish. The researcher collected the four translations and discussed the results with these people to decide upon the most suitable draft. This draft of the instrument was then given to English teachers to translate the Turkish version of SQAS back into English. The researcher compared the SQAS that was translated into Turkish and back again into English, to the original version of this scale, to determine if any differences existed between original version and the translated version. The purpose of doing this translation was to make certain that the wording of items in Turkish would be equivalent to the original meaning of items in English.

Data Collection Procedure

From the 24 health-fitness clubs that are currently operating in Ankara, 9 were randomly selected and contacted for participation in the study. Some of the health-fitness centers were eliminated from the sample because of their limited number of members, programs, size or not having permanent sport facilities. The researcher contacted 9 randomly selected health-fitness clubs' managers in Ankara not only for their permission but also to get information about their working hours and the schedule of their programs. Only one of the health-fitness clubs did not give permission to collect data on the grounds that their members had already participated in a great deal of research.

The SQAS-T was administrated to members in their club setting especially before the exercise period. Before the administration of the scale, members who agreed to participate voluntarily were told how to complete the inventory.

Participants who returned incomplete inventories were eliminated from this study. Overall, the data were analyzed for the 636 of the 683 inventories that were returned from the members.

Data Analysis Procedure

The procedure in this stage involved confirmatory factor analysis (CFA) to analyze the data from the respondents of the scale. The purpose of the CFA is not to identify the numbers of factors, but to confirm the factor structure of the scale. Consequently, CFA is more of a theory-testing procedure where variables can be specified to be loaded on certain factors, and the number of factors is fixed in advance. In CFA, the researcher begins with a hypothesis prior to analysis (Stevens, 1996). CFA was completed within the framework of the Windows LISREL 8.5 (Jöreskog and Sörbom, 2002).

Using Windows LISREL 8.5 (Jöreskog and Sörbom, 2002) computer program, the six-factor model (40 items) was analyzed based on the Maximum Likelihood (ML) estimation method. The following five steps were used in the implementation of the CFA:

(1) Model specification
(2) Identification
(3) Estimation
(4) Testing fit
(5) Respecification

In model specification, an initial model is generated prior to estimation. The formulation of this model is founded on the theory or past research. Once a model is identified, an estimation method is selected. The selected estimation technique is based on the distributional properties of the variables being analyzed. The model is tested as to whether it is consistent with the data, after obtaining the estimates. If so, the process can be stopped. If not, the model could be improved through respecification. While doing so, steps 2 through 5 may be repeated, usually many times (Bollen and Long, 1993).

The PRELIS 2.53 (Jöreskog and Sörbom, 2002) computer program was used to examine the degree of skewness and kurtosis as well as multivariate normality. The composite reliability (CR) of both Expectation Scale and Perception Scale for the six-factor model was also calculated based on the following formula.

$$\frac{(\Sigma \text{ Lambda X})^2}{(\Sigma \text{ Lambda X})^2 + \Sigma \text{ Theta Delta}}$$

The variance extracted (VE) was calculated based on the following formula (Fornel and Larcker, 1981):

$$\frac{(\Sigma \text{ Lambda X})^2}{(\Sigma \text{ Lambda X}^2) + \Sigma \text{ Theta Delta}}$$

Findings

Confirmatory Factor Analysis (CFA) was used to examine the factor structure of the Turkish version of the Service quality Assessment Scale (SQAS-T). Since the original SQAS has six factors, a six-factor model was proposed for the SQAS-T.

Expectation and Perception of Service Quality

One of the basic assumptions of CFA is multivariate normality. In this regard, the data was examined using the PRELIS 2.53 (Jöreskog and Sörbom, 2002) computer program. The basic assumption of multivariate normality was not met (i.e., $\chi^2 = 105{,}585$, $p < .00$) for the expectation model. The distributions of most items in this current sample were negatively skewed and leptokurtic. Nevertheless, the Maximum Likelihood (ML) estimation method was used in conducting CFA.

Using the Windows LISREL 8.5 (Jöreskog and Sörbom, 2002) computer program, the six-factor model (40 items) was analyzed based on the ML estimation method for the expectation model. The chi-square statistics of the model was significant (i.e., $\chi^2 = 2{,}615$, $df = 725$, $p < .01$) but the df to χ^2 ratio was low (i.e., under 1:4). The goodness-of-fit indices of the model were admissible. For example, the Root Mean Square Error of Approximation (RMSEA) = .067, Standardized Root Mean Square Residual (SRMR) = .056, and both the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), as well as the Non-Normed Fit Index (NNFI) = .95. All these indices indicated that the model provided a reasonable fit to the data. The perception data was first examined through PRELIS 2.53 (Jöreskog and Sörbom, 2002) computer program. The basic assumption of multivariate normality was not met (i.e., $\chi^2 = 19{,}002$, $p < .00$). Similar to the expectation model, the distributions of most items in the perception model were negatively skewed and leptokurtic.

Using the Windows LISREL 8.5 (Jöreskog and Sörbom, 2002) computer program, the six-factor perception model was analyzed based on the ML estimation method. The chi-square statistics of the model was significant (i.e., $\chi^2 = 2{,}227$, $df = 725$, $p < .01$). The df to χ^2 ratio was also low and under 1:4. The goodness-of-fit indices of the model were satisfactory. For example, the RMSEA = .059, SRMR = .054, and both the CFI, the IFI, as well as the NNFI = .96. The results of goodness-of-fit indexes and model-fit statistics of expectation and perception model are presented in Table 1.

Reliability Analysis

In this study both CR and VE were calculated. The CR and VE measures were used in preference to Cronbach

Table 1.
The Results of Goodness-of-Fit Indexes and Model-Fit Statistics for Expectation and Perception Model

	RMSEA	SRMR	CFI	IFI	NNFI	χ^2	df
Expectation of Service Quality	.067	.056	.95	.95	.95	2,615	725
Perception of Service Quality	.059	.054	.96	.96	.96	2,227	725

alphas as it has been shown to have more advantages (Ailawadi, Neslin and Gedenk, 2001). The CR is an internal consistency reliability measure that accounts for the measurement errors (theta delta) (Fornell and Larcker, 1981). The VE is defined by Fornell and Larcker (1981) as the "amount variance captured by the construct in relation to the amount of variance due to the measurement error" (p.45).

In this study, the CR and VE were computed separately for both the expectation model and the perception model.

The CR and VE by the six constructs of the expectation model are given in Table 2.

The CR of the six factors of the expectation model was .76 (Staff), .81 (Program), .73 (Locker Room), .82 (Physical Facility), .83 (Workout Facility), and 1.00 (Child Care).

On the other hand, with the exception of Child Care (.99), the VE by the six constructs of the expectation model were comparatively low: 26 (Staff), .38 (Program), .35 (Locker Room), .40 (Physical Facility), and .45 (Workout Facility).

The CR and VE by the six constructs of the perception model are given in Table 3.

The CR of the six factors of the perception model was .86 (Staff), .84 (Program), .82 (Locker Room), .74

Table 2.
Composite Reliability and Variances Extracted by Six Constructs of the Expectation Model

	Composite Reliability	Variance Extracted
Staff	.76	.26
Program	.81	.38
Locker Room	.73	.35
Physical Facilities	.82	.40
Workout Facilities	.83	.45
Child Care	1.00	.99

Table 3.
Composite Reliability and Variances Extracted by six Constructs of the Perception Model

	Composite Reliability	Variance Extracted
Staff	.86	.40
Program	.84	.43
Locker Room	.82	.48
Physical Facilities	.74	.29
Workout Facilities	.84	.47
Child Care	1.00	.98

(Physical Facility), .84 (Workout Facility), and 1.00 (Child Care).

As shown in Table 3, the VE ranged from .29 (Physical Facility) to .98 (Child Care) for perception model. These results were similar to the findings of expectation model.

Discussion and Results

The CFA was conducted for both the expectation model and perception model of the SQAS-T. Therefore, the results of present study were discussed in the framework that includes both the expectation and perception scores in terms of original scores of the SQAS that was developed by Lam (2000).

Examination of the Six-Factor Expectation-Perception Model with respect to Goodness-of-Fit Statistics and Model-Fit Statistics

The findings of the present study indicated that, in this current sample the distributions of most items were negatively skewed and leptokurtic. Nevertheless, the Maximum Likelihood (ML) estimation method was used in conducting the CFA since extensive research on the robustness of the ML method indicated that this method is almost always acceptable even when data are non-normally distributed (Harlow, 1985; Hoyle and Panter, 1995; Muthén and Kaplan, 1985; Tanaka and Bentler, 1985; West, Finch and Curran, 1995). Furthermore, Olsson, Foss, Troye and Howell (2000) suggested that a sample size of 2,000 is necessary for the Weighted Least Square, instead of the ML, estimation method.

The findings of the expectation model of the SQAS-T demonstrated that the goodness-of-fit indices (RMSEA, SRMR, CFI, IFI, and NNFI) of the model were admissible. As pointed out by Steiger (1989) and Byrne (1998), values of the RMSEA of less than .05 indicate a very good fit, and values up to .08 indicate reasonable errors of approximation in the population. MacCallum, Browne and Sugawara (1996) further commented on these cutpoints by declaring that values of the RMSEA between .08 and .10 indicate mediocre fit, and those greater than .10 indicate poor fit. On the other hand, the SRMR ranges from zero to 1.00 and "in a well-fitting model this value will be small – say, .05 or less" (Byrne, 1998, 115). Since the RMSEA and SRMR values of the SQAS model were .067 and .056, respectively, the values were in the uppermost ranges.

In addition, Hu and Bentler (1999) further commented on the ML method that cutoff values close to .95 for CFI, .08 for SRMR, and .06 for RMSEA are needed before concluding that there is a relatively good fit between the model and the observed data. In this study both the CFI, IFI, and NNFI fit indices values (i.e., .95) demonstrated that the six-factor expectation model provided a reasonable fit to the data set. The result of goodness-of-fit indexes and model-fit statistics for expectation model are similar with the original SQAS scores (RMSEA, SRMR, CFI, IFI, and NNFI).

Another result of this study is that, similar to the expectation model, the distributions of most items in the perception model were negatively skewed and leptokurtic. Therefore, the six-factor perception model was examined based on the ML estimation method. Similar to the expectation model, even if the RMSEA and SRMR values of perception model values are slightly higher than .05 (.059 and .054), it is still within an acceptable range when other fit indices are good. In other words, all indices (RMSEA, SRMR, CFI, IFI, and NNFI) indicated that the perception model provided a reasonable fit to the data. On the whole, both the expectation and perception model were admissible, with the perception model slightly better than the expectation model.

Examination of the Six-Factor Expectation Model with respect to Composite Reliability and Variance Extracted

The highest reliability was found for Child Care (1.00) and the lowest reliability were found for Locker Room (.73) that were all above the .70 which was considered acceptable (Fornell and Larcker, 1981). In this study, values of expectation model can be considered very good since all of the CR values were higher than .70.

The VE of six constructs of the expectation model ranged from .26 (Staff) to .99 (Child Care). On the other hand, with the exception of Child Care (.99), the variances extracted (VE) by the six constructs of the expectation model were comparatively low. These values were all lower than the .50 standard (Fornell and Larcker, 1981).

Finally, these results suggest that all items under each factor were reliable in estimating their respective construct.

Examination of the Six-Factor Perception Model with respect to Composite Reliability and Variance Extracted

The CR values of the perception model that were obtained in this study were similar to the results obtained by Lam (2000) which ranged from .82 to .93. Besides, the results of the CR of perception model ranged from .74 to 1.00 which were all above the .70 which was regarded as acceptable (Fornell and Larcker, 1981). These results suggested that translating the original SQAS into Turkish did not caused any major problem. In other words, all individual items contributed to the functioning of their subscale and language differences appeared not to compromise the effectiveness of items.

Similar to the expectation model, with the exception of Child Care (.98), the variances VE captured by the six constructs of the perception model were relatively low. The VE of the six-factors were .40 (Staff), .43 (Program), .48 (Locker Room), .29 (Physical Facilities), and .47 (Workout Facilities) respectively, which were not considered acceptable when compared to the minimum of requirement of .50 (Fornell and Larcker, 1981). These VE results were not similar to those produced by Lam (2000). Since, the VE values of the SQAS ranged from .61 (Physical Facilities) to .72 (Locker Room) that were all greater than .50.

The findings of present study demonstrated that both the expectation and perception model proposed by Lam (200) were admissible. However, it should be considered, even when a model fits to the data well, the presence of other equivalent models should not be ignored (MacCallum, 1995). In other words, finding a model that fit the data well does not signify that the model is the only or optimal model for the data. This means that it still possible to increase the fit indices values. Therefore, further research is needed to deal with the increasing fit indices values of defined six-factor model.

In conclusion, the present study demonstrated that the SQAS with its six-dimension structure proposed by Lam (2000) appears to be a reliable and valid instrument to measure the quality of service attributed at health-fitness club's in Ankara. Further work is required to be done with other groups in order to reach a definitive conclusion about the reliability and validity of SQAS for Turkish populations.

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