# Using an enhanced SERVQUAL approach to assess service quality in Czech fitness centers

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**ABSTRACT**

This study is focused on the issue of sport service validation in the fitness domain; it aims to propose a systematic procedure for evaluating the quality of services in the Czech fitness industry. Cross-cultural transfer and validation of the SERVQUAL method (Parasuraman, Zeithaml, Berry, 1988), which was originally validated for American customers, is discussed practically. The modified Czech version of the SERVQUAL questionnaire was the main tool of data collection in the market research of six fitness centers chosen randomly with a sum of 697 participants. Upon completion of data collection, the reliability of the model was repeatedly evaluated by means of SEM – Structural Equation Modelling. Based on the SEM results a hierarchical structured model was designed with a general factor and four factors corresponding to questionnaire subscales.

**KEYWORDS**

sport; customer satisfaction; questionnaire; structural equation modelling

## INTRODUCTION

In 2016 the European fitness sector included more than 48,000 fitness centers and sports centers with over 50 million people, and generated almost € 27 billion in annual sales (Deloitte, 2017). The Czech Republic has over 2,500 registered fitness centers, but this service industry is still growing. In 2015 the Czech Fitness Chamber reported 18% growth in new users, and found that an additional 33% of people planned to start using the services of fitness centers in the upcoming year (Česká Komora Fitness, 2016). The fitness industry in the Czech Republic has rapidly expanded, but services are still running ahead of demand. The level of fulfillment of human needs is a decisive

factor for customer satisfaction and assessment of quality. Generally, if people are satisfied with the quality of services, they tend to use them more regularly and repeatedly. This is particularly necessary for organizations, such as fitness centers, which were created to provide regular services, and who are competing based on the assessment of their ability to satisfy customers.

Customer's expectations are constantly rising in every segment of society, including the fitness industry. So logically, as the range and quality of services increases, there is an increase in the demands of customers. These requirements are not always easy to meet. However, fitness centers must continually strive to do so, even though the competition is high-powered and winning new customers is increasingly difficult. Therefore, the current strategy of profitable sports organizations is orientated toward retaining current customers. Employees are in direct contact with these customers, and thus they can directly influence future purchase decisions.

To evaluate how services meet the needs and demands of customers, managers use different standards to measure service quality and customer satisfaction. These standards are constantly being sharpened across all related fields from practical marketing services to academia. One such evaluation tool was introduced by Parasuraman, Zeithaml, and Berry in 1985. This survey measuring five qualities of service has been adapted and applied various industries and contexts. In this article we explain the process of adaptation of the SERVQUAL model to the Czech fitness industry.

In recent years, experts are inclined towards the notion that service quality must be assessed by the customer for whom the service is intended. This type of evaluation is not always objective, and may not correspond with the opinion of the professional community. However, in the profit sector of the service industry, fitness centers being a good example, the satisfaction of experts or management is not necessary, in contrast to that of customers themselves. As mentioned above, it is the customer's satisfaction which increases their loyalty, and thus affects the profitability of organizations which provide services.

Generally, to assess quality of service, non-professionals, and in many cases even professionals, use methods which are not sufficient, neither verified statistically nor methodologically; thus the reliability and the validity of the results of such investigations is often speculative. This study was therefore primarily motivated by an effort to provide a high-quality diagnostic tool for assessing the quality of services in the field of fitness in the Czech Republic.

Sports managers should understand the point of their services. They should know which specific aspects of their services affect customers, customer satisfaction and perception of service quality.

### The conception of quality of service

The definition of quality of service varies based on different conceptual frameworks. Bitner and Hubbert (1994) described the concept of quality of service as the "total sum of features and characteristics of services that contribute to the ability to meet requirements" (p. 77). This definition is more oriented to the service itself than to customers. Quality is understood here as the sum, respectively, of the level of existing properties, and service quality evaluation is done on the basis of an assessment of objective criteria.

Modern marketing approaches, however, are more focused on customer needs and frequently the quality of services is defined as "a comparison of customer expectations and the actual performance of services" (Grönroos, 1984; Parasuraman, Zeithaml & Berry, 1985; Seth, Deshumkh & Vrat, 2005; Kotler, 2007; Javadein, Khanlar & Estiri, 2008). This understanding of the concept of service quality is based on the assumption that the requirements for a particular level are primarily determined by the customers themselves. Therefore, it is necessary to define the concept of quality relatively, i.e. from the subjective viewpoint of the customer.

## Quality of service in the field of fitness

In the process of searching for the best quality in the area of fitness, it is necessary to emphasize properties which are typical for services in this sector. Primary attention is paid to human performance, which occurs at the interaction between the customer and the provider of sports and recreational services (Grönroos, 1990; Zeithaml & Bitner, 1996; Nuviala, Grao-Cruces, Pérez-Turpin & Nuviala, 2012; Tsitskari, Antoniadis & Costa, 2014; Lim, ROMs, & Armentrout, 2016). In the process of providing services, it is assumed that the employee's behaviour, attitude, and experience influence the course and outcome of services for which a customer actively participates. Fitness services require a close relationship and a high level of engagement between the customer and the service provider. In these relations, there are not standardized services offered, and thus both the customer and the service provider must make a conscious effort to interact, to ensure adequate service provision. Overall, human performance is a core product and customer experience is the main output.

In the fitness industry, there is also a relatively high level of interaction between customers themselves. They influence each other and have an impact on the final quality of services provided. Managers of fitness centers should be aware of these interactions and avoid possible problems, especially during classes supervised by trainers or instructors. The described attributes are characteristics of traditional services – immateriality, inseparability, variability, transience, lack of ownership (Kotler & Armstrong, 2004). Sports and sports services provided by fitness centers can be explained by these distinctive characteristics very well.

Although the service is intangible, the material elements associated with it should not be forgotten. The environment and equipment of a fitness center are important factors which determine the level of quality perceived by customers. For example, modern amenities and artistic design of equipment in the fitness center can positively affect customer service quality assessment. Lakh and Mohanty (1995) interpret service as "the operations, systems, or commercial transactions involving tangible and intangible attributes carefully combined to maximize customer satisfaction and efficiency of the functional system" (p. 140). In other words, customers form their perceptions of quality through their overall impression of the service, equipment and facilities of the provider.

Reflecting on the quality of services in fitness, it is also necessary to consider the motives which lead customers to use the services of a fitness center. According to Grönroos (1990), customers purchase services to solve their problems. The intention of purchase is to gain subsequent benefits and results arising from the service, rather than the service itself. In the sports and recreation industry, the customer's experi-

ence is the main result. In the field of fitness, however, apart from the enjoyment of the physical activity itself, customers intend to use the service to solve real problems. Such problems may be that they are overweight, have poor fitness, flabby or short-ened muscles, back pain, stress and other similar troubles. Therefore, it is desirable to identify the possible problems and motivations of customers who participate in fitness programs in order to effectively help them. Any improvement in their physical or mental state determines not only their perception of service quality, but also their level of satisfaction.

## Properties of service quality

In developing the SERVQUAL model Parasuraman, Zeithaml and Berry (1985) at-tempted to quantitatively measure characteristics of service quality. Their research is based on interviews with service providers and their customers, from whom they dis-cerned why they were, or were not, satisfied with the services provided, and which sit-uations or circumstances contributed to their positive or negative impressions. Based on the results of these and other studies, Parasuraman et al. suggest five characteristics of service quality which customers typically assess. There were *tangibles* – appearance of facilities, equipment and personnel; *reliability* – ability to perform the promised service reliably and accurately; responsible approach – *responsiveness* – readiness and willingness to help customers; *assurance* – knowledge and skills of employees and their ability to create the feeling of customer confidence and trust; and *empathy* – readiness and ability to empathize with individual customer requirements.

According to Grönroos (1984) there are two basic characteristics of quality of ser-vice, *technical and functional*. The technical characteristics refer to the relatively meas-urable elements of the service which a customer receives during their interaction with the service provider. They are a result of provided services. Evaluation of the technical quality of service seems to be easier, but sometimes it can only be objectively assessed by experts, or only be assessed after a certain period of time.

Customers, however, are also interested in the way the service is provided to them, this is referred to as the functional quality of services. Functional perception of quality is subjective. It is affected by the environment in which the services are provided, the behaviour of the employees of the organization, the length of time waiting, etc. Tech-nical and functional qualities influence the organization's image, which has an inverse effect on the expectations which a customer connects to the service.

Now with regard to customer expectations and services performed, Berry (1986) defines two other characteristics of services – *routine and exceptional*. Indicators of routine characteristics describe the level of service which is provided under normal conditions. The customer has expectations of a typical routine of service provision and service providers which is familiar.

However, if unforeseen interferences occur during routine services, customers ex-pect so called "outstanding characteristic quality of service", i.e. the staff is helpful and able to advise in these unexpected situations. This may include handling custom-er's complaints; which may or may not be justifiable. In either case, however, a sen-sible and highly individual approach is required. These situations pose risk to the or-ganization: the customer may be dissatisfied with the service, but also the opportunity that customers will be pleasantly surprised by how the service provider manages the

situation. Particularly these situations, when it is possible to meet or exceed customer's expectations, may leave the impression of exceptional quality, and thus further increase the loyalty of the customer whose complaint was solved.

Thus it is evident that many factors influence customer perception of service quality. The SERVQUAL method incorporates these into five characteristics of service quality as a standardized tool for evaluation (Parasuraman, Zeithaml & Berry, 1988).

## Service quality measurement

According to Oliver (1997), customer satisfaction is achieved when "a product or type of service or product service itself has provided or provides a pleasant level of satisfaction of its consumption" (p. 13). According to Patterson and Spreng (1997), customer satisfaction is the feeling when customers' needs are met and their expectations are fulfilled. Satisfied customers will probably use the service again or tell other potential customers about their positive experience. According to Cronin, Brady and Hult (2000), satisfaction may well be regarded as an event preceding the future intentions of the customer. Varying perceptions of customer satisfaction, and quality of service indicators, leaves room for a relatively wide range of approaches to measurement. Quality measurement can be done from the perspective of the service provider, or from a customer's point of view. In the first case, mostly objective criteria are assessed; while in the second case, the criteria are subjective.

According to Mateidese (2002) using objective criteria focuses on quality measurements more than on the service itself, especially in the case where there are clear indicators which can be verified by measurement (e.g., the status of the service in the process of being provided). In contrast, the subjective measurement is subordinate to the subjective criteria of the perception of quality assessors, including their subjective needs and expectations. The fact that quality is assessed on the basis of the subjective perception of reviewers – mostly customers – does not mean that the research is not objective.

The focus when measuring service quality must be on validity (meaning selection of the most suitable marketing research technology, which will provide the information the organization needs), and reliability (it is desirable to obtain similar results when the quality measurement is repeated under the same conditions).

Measuring quality using subjective criteria is based on the subjective assessment of the individual characteristics of service quality. These properties are evaluated by the customer and several indicators are used. It is assumed that the total evaluation of service quality is the result of an individual assessment of each indicator, and each feature of quality services, taking into account that not every property will have the same importance each customer. The SERVQUAL measurement model was built on this theoretical concept and is thus assessed to be an adequate tool for measuring service quality in the fitness industry, but requires adequate adaptation and refinement to the Czech market.

The SERVQUAL method is one of the most popular tools used by researchers evaluating the quality of services in various domains. In the sports industry it has also been used, tested and refined several times (Wright, Deray & Goodale, 1992; Cronin & Taylor, 1994; Howat, Absher & Milne, 1996; Howat, Murray, & Crilley, 1999; Kouthouris & Alexandris, 2005; Robinson, 2006; Tsitskari, Tsiotras & Tsiotras, 2006; Javadein,

Khanlar & Estiri, 2008). SERVQUAL has been culturally adapted to the sport context in multiple countries, including Greece (Alexandris, Dimitriadis, & Kasiara, 2001), Iran ( Javadein, Khanlar & Estiri, 2008), Spain (Nuviala, Grao-Cruces, Pérez-Turpin & Nuviala, 2012), Cyprus (Tsitskari, Antoniadis & Costa, 2014), and Greece (Tsitskari, Tzetzis, & Konsoulas, 2017). To test the method in the Czech Republic it is necessary to first examine the rules for intercultural transfer of evaluation methods. There were several views taken into account, which means in many cases, carrying out tests from the social sciences for transfer, and these strictly require the development of concepts and tests based on local cultural realities. This direction is represented by the so-called "psychology indigenous movement" defined by Kim and Berry (1993). This movement refers to completely different cultural habits between Western and Eastern civilizations. The Czech Republic is ranked among developed countries and its culture is not different. Also, the range of services, equipment for fitness centers and service quality in this area is now at a comparable level to economically developed countries in Europe and the US, where the SERVQUAL method has been used most often. In order to design a model structure for the Czech version of SERVQUAL, the highest quality diagnostic method of structural equation modelling (SEM) is used. The purpose is to test models conceptualized by the currently accepted theory of the division of quality services to functional and technical (Grönroos, 1990), while the original model was evaluated according to the functional quality of Parasuraman, Zeithaml and Berry (1988), using five factors.

## METHODS

Based on the necessity of valid and reliable measurement tools for measuring service quality, the aim of this study was to use exploratory factor analysis to verify the diagnostic quality of a modified version of SERVQUAL in the Czech environment of fitness centers. On the base of the results, structural modelling was used to find a more suitable hierarchical structure of this model for the specific Czech environment.

Several necessary steps were needed to achieve these goals. The first step was the transfer of an intercultural SERVQUAL questionnaire, which had previously been adjusted to the fitness environment ( Javadein, Khanlari & Estiri, 2008). It was necessary to compare the semantic, normative and conceptual equivalence of the translated version and the original one. In this work, attention is paid especially to conceptual equivalence.

To translate the questionnaire, modified direct translation was used. Translators worked with the original version of the questionnaire as well as with other versions ( Javadein, Khanlari & Estiri, 2008; Tsitskari, Tzetzis & Konsoulas, 2017) adapted to the environment of fitness. The English version of items used to measure constructs are given in Table 1. The exact wording of the items in the Czech language was also consulted with experts in psychology, methodology, statistics and fitness. The psychologists considered possible standards of behaviour for Czech respondents. Consultation with methodology and statistics experts was aimed at understanding and complying with statistic methods; and fitness experts addressed the uniqueness of the fitness environment. Based on these outcomes several formulations of questionnaire items were adjusted. Then the entire questionnaire was validated in a pilot study on

a sample of 146 respondents from fitness centers located in the Prague 2 district. For the diagnostic evaluation of the quality of this pilot version of the questionnaire exploratory factor analysis was used.

**Table 1**    Items used to measure constructs

| Items | |
|---|---|
| T1 | Modern equipment |
| T2 | Visually appealing facilities |
| T3 | Employees who have a neat, professional appearance |
| T4 | Visually appealing materials associated with the service |
| R5 | Providing services as promised |
| R6 | Dependability in handling customers' service performed |
| R7 | Performing the services right the first time |
| R8 | Providing services at the promised time |
| R9 | Maintaining error-free records |
| R10 | Keeping customers informed about when services will be performed |
| R11 | Prompt service to customers |
| R12 | Willing to help customers |
| R13 | Readiness to respond to customers' requests |
| A14 | Employees who instill confidence in customers |
| A15 | Making customers feel safe in their transaction |
| A16 | Employees who are consistently courteous |
| A17 | Knowledgeable employee to answer customer questions |
| E18 | Giving customers individual attention |
| E19 | Employees who deal with customers in a caring fashio |
| E20 | Having the customer's best interest at heart |
| E21 | Employees who understand the needs of their customers |
| E22 | Convenient business hour |
| TQ23 | It is successful to complete exercise |
| TQ24 | The exercise can be completed without the interruption |
| TQ25 | The coach's experience is good and his (her) exercise is excellent |

Source: Javadein, Khanlari and Estiri (2008), modified by authors

The results of the pilot standardization were taken into account in the design of the second version of the questionnaire. Primarily by assessing the value of the factor loads of each indicator, some items of the questionnaire were changed. Their exact wording was again consulted with experts. A modified form of the questionnaire then became the main tool for data collection in the implementation of marketing research, in which 697 respondents participated from six fitness centers. Fitness centers were chosen using a random number generator (Random Number Generator) on a list of

sports facilities, which met two fundamental criteria: scope of services offered (gym, cardio zone and aerobic zone), and facility size (minimally 400 m$^2$).

Marketing research is used to help detect weaknesses in the quality of services provided in the various sports facilities and as well as globally in the Czech context. However, first there must be a systematic procedure for evaluating the quality of services in the fitness industry. This was achieved using structural modelling.

## Conceptual equivalence

Empirical assessment of conceptual equivalence is realized by testing the similarity of factor structure. The extent to which the factor structure of the translated questionnaire is similar to the original vision is assessed. To compare the results of two exploratory factor analyses, there are no statistical tests; therefore, currently, explorative approach is not recommended, and is increasingly being replaced by confirmative approaches.

Confirmatory factor analysis, as opposed to explorative, often works with covariances, as well as correlations; it thus has a great advantage in that it can also determine the correlation between these factors. Therefore, we also used it in this work as part of structural modeling.

## Structural equation modelling

Structural equation modelling (SEM) is a parametric statistical method, which assesses structural theories of a particular factor or characteristics. It involves more than one statistical method; it includes a set of statistical procedures which help to judge the diagnostic quality of the tool. The MPlus structural model was used in this work. In this research, observable variables (i.e. *manifest* variables) where represented by questions in a questionnaire, and these are "indicators". The second types of variables, *latent* variables, are represented by items which cannot be measured directly, and are called "factors" (Bollen & Curran, 2005).

Statistical estimates of the relationships between items from the questionnaire and factors are called factor loadings, and are generally interpreted as regression coefficients, which can be both standardized and non-standardized in form. Indicators in confirmatory factor analysis (CFA) are continuous variables. An important prerequisite is that a factor is also a continuous latent variable (McDonald, 1999).

The basic mathematical expression for the general factor model:

$$x = \Lambda f + \varepsilon,$$

where: x = directly observed response (answer from the questionnaire)
$\Lambda$ = matrix of factor loadings
$f$ = random vector of factors
$\varepsilon$ = random vector of singularities of variables

An important prerequisite is that the singularities do not correlate with factors. Such singularities can be specified as independent. This example is expressed by Figure 1, which shows a test model structure from the modified version of the SERVQUAL questionnaire for the fitness environment (E1–E25 show the singularities of factors, X1–X25 indicators and factors are from F1 to F5).
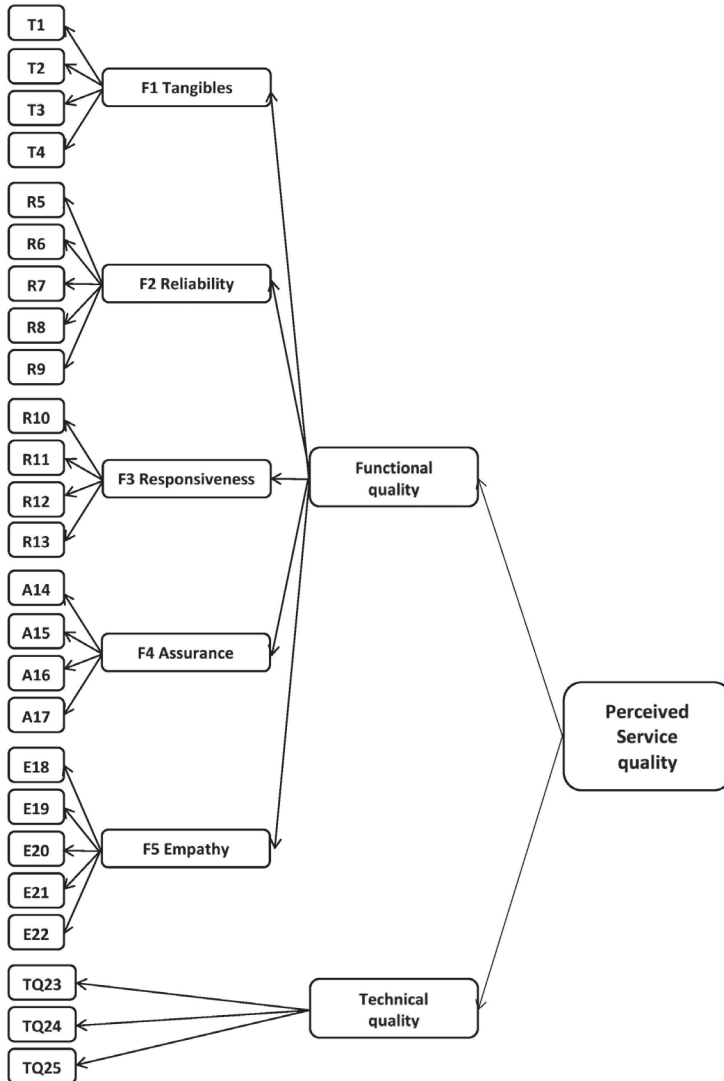
**Figure 1**    Conceptualization of a SERVQUAL model adapted to the fitness area
Source: Javadein, Khanlari and Estiri (2008), modified by authors

## Fit index

The main objective of structural equation modeling is to test a theory of selected models which are conceptualized based on the currently accepted hypothesis in the field. These conceptualized models represent the prediction of this theory between latent variables, which are measured by appropriate indicators (Hayduk, Cummings, Boadu, Robinson & Boulianne, 2007).

According to Millsap (2007), in model testing it is important to realize that the analysis of the model in SEM solves the investigator's theoretical questions regardless of whether the model, which was based on a developed theory, is maintained. Since

statistical models are only instruments of estimation, when testing models in SEM it often occurs that there is only one model whose "fit" (i.e. how well the model captures the data recorded by investigators) would lead to its absolute acceptance. Additionally, studies are conducted on different files which are not representative of the whole population, but only a part of it. Therefore, research with identical test patterns from the same population, but with different sets, also detect different model fit, and sometimes also different structures of the whole theoretical concept. The crucial question is how to proceed when there are multiple models which are based on differing alternatives for the structure, fit the data the same or with a high degree of similarity. According to Raykova and Marcoulidese (2004), the researcher can make the final decision based on knowledge of the theoretical concepts which were defined in the research. This decision, of course, is influenced by a subjective level of knowledge and understanding within the context of the theoretical concept. To determine the quality of the model so called "fit indexes" are used. These indexes determine how well the proposed model fits the data obtained from measurements by means of selected indicators on the research group (Kline, 2011).

SEM research does not generally use only one fit index to express the quality of the model. According to some authors (McDonald & Marsh, 1990; Hu & Bentler, 1999) the use of at least three indicators of fit is considered the standard. Given the type of indicators used in the SERVQUAL questionnaire, in order to determine the quality of the model, in this paper we used the following indexes: Chi-square, RMSE (Root Mean Square Error of Approximation), SPDC (Standard Root Mean Square residuals), WRMR (Weighted Root Mean Square Residual), CFI (Comparative Fit Index), TLI (Tucker-Lewis Index).

The **Chi-square model** indicates discrepancy or inconsistency between the expected and the measured result. This fit index reflects the so-called "fit imperfection" – the higher the value of chi-square, the worse the model fits. In contrast to other indexes, there is no direct reference range to which the index values should correspond. This statistic is based on the number of model parameters and file size. Additionally, if other indexes indicate a good fit, chi-square significance does not have to result in model rejection.

**CFI Index** (Comparative Fit Index) measures the relative improvement of the fit of the proposed model compared to the base model. CFI index values are in a closed interval from 0 to 1, with larger values indicating a better fit for the model. The recommended acceptable CFI index is 0.95.

**TLI Index** (Tucker-Lewis Index) represents a non-normed fit index where the values are not only in the closed interval from 0 to 1, but may be greater than 1. The recommended value of this fit index is 0.95.

**RMSE Index** (Root Mean Square Error of Approximation) expresses "approximate" model fit in the population. The lower the RMSE is, the better the fit of the model. Values of ≥ 0.10 represent a bad fit model. Values ranging from 0.08 to 0.10 represent the average model fit; values ranging from 0.05 to 0.08 are a good fit; and values ≤ 0.05 are a very good model fit.

**WRMR Index** (Weighted Root Mean Square Residual) is based on a comparison of differences between the observed and predicted covariances (model). The lower the index of WRMR, the better the fit of the model. The recommended value of this index is ≤ 1.

Structural modelling was used initially in this work within the framework of the pilot study using the responses from 146 respondents. This method was used again upon completion of the research in order to find the best model for evaluating the quality of services through the Czech version of the SERVQUAL questionnaire. The results of the structural equation modeling are presented in the results section.

## RESULTS

The first verification structure based on structural equation modelling was completed in the framework of the pilot study based on answers from 146 respondents. The model was re-sorted to a new structural model based on answers from 697 respondents. Reliability assessment of the questionnaire, and modelling of its structure, went through several stages. The highest diagnostic quality was found by testing each model structure as presented stage by stage below.

**Table 2**    Fit index of models analyzed

| Model | Chi-square | CFI | TLI | RMSEA | WRMR |
|---|---|---|---|---|---|
| 1-factor model | 1189.43 | 0.92 | 0.91 | 0.069 | 1.526 |
| 6-factor model without correlations | 10102.66 | 0.19 | 0.19 | 0.230 | 6.248 |
| 6-factor model with correlations | 1074.03 | 0.933 | 0.923 | 0.067 | 1.428 |
| 4-factor model | 1090.84 | 0.932 | 0.924 | 0.067 | 1.445 |
| **4-factor model without questions 1 and 3** | **907.81** | **0.943** | **0.936** | **0.065** | **1.376** |
| 1-factor model without questions 1 and 3 | 990.09 | 0.937 | 0.930 | 0.069 | 1.450 |

### Stage 1–1 factor model
A one-factor model was tested first, having a single general factor (the latent variable called *service quality*). This one-level unidimensional structure makes a strong assumption that all 25 items of the Czech version of the SERVQUAL questionnaire will measure one common feature. The model fit indexes shown in Table 2 show that this model is not entirely acceptable, and that the structure of the modeled theoretical concept is likely to be truly multidimensional.

### Stage 2–6 factor model without correlations
The second model tested was a 6-factor model. Even though this did not seem likely, the structure was defined so that the individual factors did not correlate with each other, and thus evaluate different attributes in the quality of fitness services. Based on current theory, the following individual factors were identified: *tangibles, reliability, responsiveness, assurance, empathy*, and *technical quality*. The results of the six-factor model with non-correlated factors were that although the factor loads of most indicators improved, the indexes of fit had unacceptable values. This significant deterioration of the model was due to the strict correlation limitation – zero relationship between factors. Therefore, these relationships between factors were freed for the next phase of structural modeling.

### *Stage 3 – 6 factor model with correlations*

In stage 3 the six-factor structure was retained with correlations between individual factors released, thereby significantly improving the model's fit. However, as shown in Table 1, the model still did not achieve fully acceptable reliability values. Indicators 1 and 3, which still had very low factor loads, continued to be problematic in the model. In addition, a strong dependence was found between factors to release correlations. The correlation between the *assurance* and *empathy* factors was 0.945, indicating that these two qualities of service quality are related, and customers are actually evaluating a second property when evaluating one property. Similarly, there is correlation between *empathy* and *technical quality* and between *responsiveness* and *security*. In all three cases, the correlation exceeded 0.9, indicating a strong dependence. Thus, the combination of the factors *responsiveness, assurance* and *empathy* into one was considered, as respondents by virtue of one factor actually affected the other two. This connection seemed logical also because the pilot study pointed out that fitness center customers themselves could not distinguish between what quality of service they were evaluating. Simply stated, they expected that the fitness center employees could empathize with their needs (*empathy*), act with respect to these needs (*responsiveness*) and thus gain customer confidence (*assurance*).

### *Stage 4 – 4 factor model with questions 1 and 3*

In stage 4, the structure of the model was modified based on the strong correlations between some factors seen in stage 3. The factors *responsiveness, assurance* and *empathy* were combined into one factor called *staff behavior*. The factors *tangibles, reliability* and *technical quality* were left alone. The model of this hierarchical structure showed no significant improvement, and the fit index values remained almost unchanged. The results continued to point to two problematic items in the *technical quality* factor. The factor loads of indicators 1 and 3 remained virtually unchanged.

### *Stage 5 – 4 factor model without questions 1 and 3*

The next phase of structural modeling was based on the reference to the low factor load of indicators 1 and 3. It was therefore decided to exclude these two indicators to assess the *technical quality* factor. Thus, the total number of indicators (questionnaire items) dropped to 23. In this case, the chi-square value decreased significantly and the other fit indices also improved slightly. Thus, it was found that in this model, indicators 1 and 3 were intrusive variables whose information did not relate to the theoretical concept being evaluated and to the quality of the proposed models.

### *Stage 6 – 1 factor model without questions 1 and 3*

The finding that indicators 1 and 3 were intrusive variables led to the next step of structural modeling. Due to the fact that a strong interdependence of factors was evident from the data analysis of the proposed models, it was decided to repeat the confirmatory factor analysis for categorical data in the form of a unidimensional model, as was already proposed in the first stage of SEM, with the difference that problematic items 1 and 3 were omitted. All remaining indicators in the form of individual statements in the questionnaire now measured only one factor named *service quality*. Indeed, the new measurement revealed improvement in most fit index values compared to

one-factor model values in stage 1. However, in the overall comparison of all results achieved, this one-factor model without the two interfering indicators is not as good as the previous 4-factor model. In particular, the chi-square index, which expresses the mismatch between the expected and measured results, and the RMSEA, indicating the approximate fit of the model to the population, was higher in comparison to the four-factor model indices without items 1 and 3.

### Enhanced 4-factor model with 23 indicators

As the SEM stages above illustrate, the four-factor model without questions 1 and 3 has the best fit. It achieves the best values in all of the monitored indexes. Also, factor load factors (Table 2) for the four-factor model were the best. This was not true for all indicators, but the average factor load of all indicators of this model was 0.6, which was the highest of all analyzed models. Thus, the resulting design became a 4-factor model with 23 indicators.

Thus, quality of service is evaluated by respondents through four characteristics of service quality illustrated in Figure 2. Indicators belonging to *tangibles, reliability and staff behavior* can be described as functional quality. It is *how* the service is provided. Primarily, the interaction between customers, and all the staff customers deal with, is evaluated. However, abiotic elements are also judged, which strongly influence the customer's perception of service. Among these are the equipment of a fitness center, interior and exterior appearance, and overall atmosphere. *Technical quality*, on the other hand, expresses *what* the customer is provided.

A "*tangibles*" factor is measured by only two indicators which evaluate the fitness center environment and its promotion. *Reliability* is assessed through five indicators, through which respondents judged how a fitness center keeps its promises, and whether it provides services without errors or shortcomings. *Staff behavior* is represented by a total of 13 items on the questionnaire. The respondents evaluate the staff and their attitudes, politeness, and willingness and ability to help. They also assess the degree of empathy, or how staff are able to empathize with the needs of their customers. *Technical quality* is expressed as an evaluation of structures and physical exercises as a result of the work of coaches, instructors and trainers.
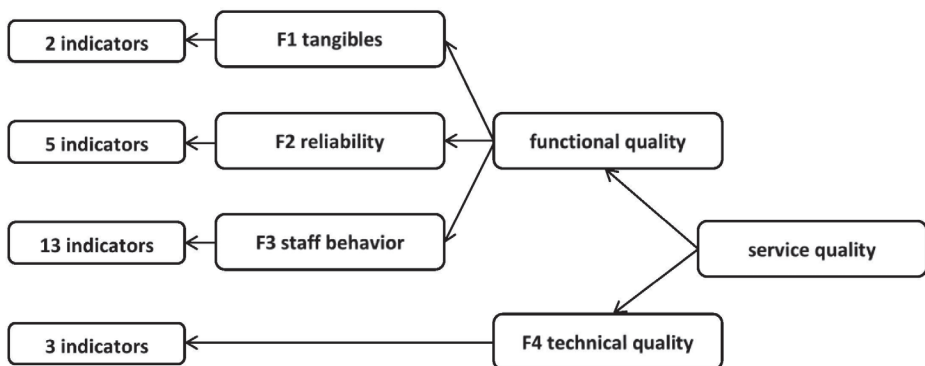


**Figure 2**    Structure model proposed for assessing the quality of services in the Czech fitness environment

## Factorial validity of the proposed model

**Table 3**   Factor loadings of each indicator (items of questionnaire)

| F1 Tangibles | | F2 Reliability | | F3 Staff behavior | | | | | | | | F4 Technical quality | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X2 | 0.608 | X5 | 0.604 | X10 | 0.573 | X14 | 0.749 | X18 | 0.459 | X23 | 0.594 |
| X4 | 0.505 | X6 | 0.685 | X11 | 0.474 | X15 | 0.609 | X19 | 0.714 | X24 | 0.624 |
| | | X7 | 0.685 | X12 | 0.578 | X16 | 0.493 | X20 | 0.708 | X25 | 0.624 |
| | | X8 | 0.403 | X13 | 0.700 | X17 | 0.641 | X21 | 0.774 | | |
| | | X9 | 0.558 | | | | | X22 | 0.327 | | |

The values in Table 3 represent the factor loadings – the correlation between individual statements in the Czech version of the SERVQUAL questionnaire with four latent factors (service quality characteristics). These values represent the factorial validity of the questionnaire items.

Factor loadings of all indicators are above the value of the correlation coefficient of 0.3, which represents the boundary between small and medium indicator impact. Another imaginary boundary is presented by a value of 0.5. Out of the 23 total questionnaire items there are five which fall below this threshold. Their influence on the factor can be described as medium. The remaining 18 items are higher than the 0.5 factor load, which represents a great influence.

## DISCUSSION AND CONCLUSION

The aim of this study was to propose a particular methodology for evaluating the quality of services in the field of fitness in the Czech Republic. As stated previously, there is no universal, generally true, and always applicable definition for the term "quality of service". The current approach of marketing professionals expresses the consensus belief that the one who decides whether a given service is good or not, should always be the customer for whom the service is provided. Current marketing approaches reflect the particular demands of customers, using subjective measurement methods. Customers, at least partially, examine individual characteristics of service quality – i.e. factors. They assess these properties by using several characters – i.e. indicators. It is assumed that the overall evaluation of the quality of services is the result of an individual assessment of each character and each feature of service quality.

The diagnostic quality of the models was assessed using several fit indexes. An important role is played by the size of the research sample, and therefore structural modeling was undertaken twice – in the pilot study before the realization of marketing research, and after its completion, when questionnaires from 697 respondents were available. Since the data from the questionnaire were scored on a seven-point Likert scale (from −3 to +3) confirmatory factor analysis was used for categorical data.

The model that was used in the actual research, had relatively good fit indexes, however high correlation between these factors (service quality characteristics) indicated the possibility of merging some of the factors into one. There may be several

causes for the high degree of overlap between individual factors. One may be that the five factors of functional quality evaluation were represented by ten factors in the original version of the SERVQUAL questionnaire. The original authors of the questionnaire, Parasuraman, Zeithaml and Berry (1988), later reduced the number of factors to 7, and finally to 5, so that only the first two (tangibles and reliability) were changed. A high degree of correlation was thus expected. Another reason may be the subjective assessment of respondents – a positive evaluation of one aspect of the fitness center may also be transferred to another aspect without actually perceiving it. Respondents may also lose motivation during the process of filling out the survey, and thus tend to copy previous answers. Another frequently discussed issue is the use of a seven-point scale. Respondents in most cases use the extreme value of "+3". Extension of point range scaled could provide respondents more margin for evaluation, and result in greater variability among responses. A respondent who marked an extreme value on the seven-point scale from −3 to +3, for example, might not make the same decision on the ten-point scale. Using an array with an even number of points might also force respondents to avoid midpoint scaling which results in problematic interpretation.

The results of structural equation modeling highlighted the high degree of correlation between the functional and technical qualities. However, in reality they are distinct concepts. While the technical quality is focused on the program itself, its complexity, the work of trainers/instructors, and its operation; while functional quality focuses on the process of providing, operating, service, the work of other employees, the environment and services associated with attending a lesson. Since indicators for the technical quality were located at the very end of the questionnaire, their evaluation could be affected by reduced attention and motivation for thoughtful responses. Moving this section to the beginning of the questionnaire could avoid this problem. It could also be helpful to clearly separate this section from the rest of the questionnaire, and a short reminder to respondents that the subject of evaluation should be the quality of lessons. A methodical work progression was selected to respect the complexity of managing all connections with intent for further investigation. These are particularly necessary due to the necessity of verification of the proposed methodological procedure in various sports organizations, both for profit and non-profit.

This work is a contribution to the further development and improvement of quality service management in the field of sport. It summarizes the current level of knowledge, and presents a generalization from experience in the process of improving the management of sports organizations. Regardless, the perception of service quality in sport is likely to remain a rather controversial issue for the foreseeable future. The divergence of concepts between different methods supports the proposition that we cannot expect a generally valid and perfect concept for assessing the quality of services to be found anytime soon. The increasing demands regarding the quality of services provided, however, creates a need to further observe this issue professionally, and develop a methodology for service quality improvement in sport management. The Czech SERVQUAL questionnaire modelled, developed and tested in this study meets this current need in the current Czech sport context.

The Enhanced Czech language SERVQUAL questionnaire is available on request from the corresponding author.

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