# FITT-Q scale a new service quality model in fitness center

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**Abstract:** A study was conducted to test the measurement of Intern Fitness Center Service Quality involving 435 respondents to confirm the FITT-Q Scale (Fitness Industry Trust Tools-Quality Scale) model. The results of this study strengthened the FITT-Q Scale as an adequate measurement for fitness center service quality as it continued to demonstrate that service quality is a multidimensional construct. The alpha reliability coefficients and construct coefficients found in this study were relatively consistent with previous findings supporting the use of a simpler and less invasive version of fitness center service quality assessment.
*Keywords: Customer's satisfaction, Fitness center, Service quality scale.*

## 1. Introduction

One of the frequent issues in fitness centers is the mismatch between customer expectations and their actual experience at the center. This can include dissatisfaction with facility cleanliness, scarcity or damage of equipment, and lack of attention from staff towards customer needs. According to a study by Parasuraman, Zeithaml, and Berry in 1991 (as cited in Liao et al., 2022), the gap between customer expectations and perceptions of service quality is a primary cause of customer dissatisfaction. Experts emphasize the importance of aligning customer expectations with actual service performance to enhance customer satisfaction. By paying attention to these findings, fitness centers can focus on efforts to improve and enhance service quality, making it more aligned with customer expectations and reducing dissatisfaction levels (Liao et al., 2022), thereby encouraging fitness club members to extend their memberships.

According to research, fitness center members who maintain their memberships for more than six months tend to remain loyal members (Clavel San Emeterio et al., 2019; MacIntosh & Law, 2015). The key factor here is the quality of their experience, which can influence their perceived value, satisfaction, and positive behavioral intentions. However, while many researchers acknowledge the importance of service quality in sports management (Çevik & Şimşek, 2020; Sevilmiş et al., 2022b; Yoshida, 2017), understanding the comprehensive consumer experience, especially regarding diverse interactions with active sports consumers, is still limited (Yoshida, 2017).

In Indonesia, there is currently no widely available instrument for evaluating service quality in fitness centers, indicating a need for the development of such an instrument. According to research by Parasuraman, Zeithaml, and Berry in 1988 (as cited in Yoshida, 2017), developing a valid and reliable instrument to measure service quality is a crucial step in enhancing customer satisfaction and organizational performance. Developing an effective service quality instrument for fitness centers plays a vital role in ensuring high-quality customer experiences and raising service standards in the fitness industry. A good service quality instrument can help fitness centers measure customer satisfaction

levels with the services provided. By using this instrument, fitness centers can determine how well employees have met customer needs and expectations.

The quality of experience is recognized as one of the fundamental factors shaping perceived value (Suhartanto et al., 2020), satisfaction (Wu & Ai, 2016), and customer behavioral intentions. At this point, it is crucial to create an experiential environment in fitness services that is hard to replicate, difficult to replace, desirable to consumers, and meets consumer expectations in terms of competitive advantage (Eskiler & Safak, 2022). This is because fitness services are seen as large-scale experiential consumption, similar to other recreational activities (such as golf and tourism). When assessed, this highlights the importance of understanding and developing experiences in the sports industry in general and the fitness industry in particular. After investigating the literature, it can be said that measurement tools to determine the quality of experience are still under development (Çevik & Şimşek, 2020). The lack of a scale in the fitness sector, which is maintaining stable growth, is an obstacle to understanding experience perceptions and outcomes for current fitness center members. Although some studies in sports management (Yoshida, 2017) emphasize the dimensions and sub-dimensions included in the consumer experience, there is no empirically validated and reliable scale for consumer experience dimensions in the context of fitness centers. Therefore, it is crucial to develop a comprehensive scale reflecting the quality of experience dimensions for fitness centers to improve service quality.

When investigating the literature on service quality in sports and fitness centers, it can be seen that researchers have revealed both general and specific service quality model structures. Scales such as An Instrument for Evaluating Service Quality of Health/Fitness Centers (SQAS) by Lam et al., 2005, The Scale of Service Quality for Participant Sport (SSQPS) by Chang et al., 2005, A Hierarchical Model of Service Quality for Recreational Sport Industry (SSQRS) by Ko and Pastore, 2005, Scale of Quality in Fitness Services (SQFS) by Chang and Chelladurai, 2003, Factor Quality Excellence of Sports Centers (QUESC-4) by Papadimitriou and Karteroliotis, 2000, Center for Environmental and Recreation Management-Customer Service Quality (CERM-CSQ) by Howat et al., 1996, Quality Excellence of Sports Centers (QUESC) by Kim & Kim, 1995, Evaluation of Perceived Quality in Sports Services (CECASDEP) by Morales et al., 2009, and Service Quality in Fitness Centers Scale by Sevilmiş and Şirin, 2019, have been developed. Similar and different dimensions are used in each measurement tool to evaluate service quality in fitness centers. Specifically, programs, instructors, staff, and physical environment stand out as the most important structures used in measuring service quality in fitness centers (Jasinskas et al., 2013; Yıldız, 2021). Today, due to their importance in fitness centers, many authors conduct research and analysis on service quality (Yıldız et al., 2021).

As consumer demands continue to change, service quality must be adjusted according to various factors that are important and become determinants for consumers (Ferraz et al., 2018). People's decisions or attitudes are based on their perceptions of the things they experience or know (Othman, Harun, Rashid, & Ali, 2019). Therefore, the perception of good service quality is a very important factor for the success of service businesses.

The lack of a widely available service quality assessment scale, particularly in fitness centers, which is based on several local cultural dimensions and specific demographic information in the Surabaya area, encourages the development of this research. It is considered that culture plays an important role in customer experiences in fitness centers. By incorporating cultural dimensions into the service quality scale development research, we can understand how cultural values, beliefs, and practices influence customer perceptions of the services they receive. This can help fitness centers tailor their service strategies to the cultural needs and preferences of different customer groups.

Simplifying and adjusting measurement scales is a common practice as new studies provide additional insights into the practicability and application of the scales. Parasuraman et al. (1988) recognized that a simpler model with fewer items is easier for management to implement, and Bentler (1990) explained that many existing models are likely to be trimmed, but significant changes to the scale will need to be confirmed using original data with specific items to ensure the modified instrument meets fit criteria. The simplification of previous recreation management survey models was done by

Hammitt, Kyle, and Oh (2009), who proposed reducing the place attachment scale from 26 items to 15 items. The criteria for selecting three items per five attachment dimensions were based on factor loading strength in the original 26-item scale and previous studies using similar items. Gould et al. (2011) reduced the 54-item Serious Leisure measurement to 18 items. Gould examined the factor loadings of the 54 items with the method factor controlled in the model to determine the best 18 items (one item per factor) that performed well for each factor of SLIM. Lam et al. (2005) presented SQAS with 40 items and a shorter version with 31 items, and the 31-item scale was re-tested as a five-factor model with 28 items by Yu et al. (2014). The purpose of this study is to confirm a shorter version of the FITT-Q Scale for future assessments of fitness members' perceptions of service quality based on local cultural dimensions.

## 2. Methods

### 2.1. Instrumentation

To develop a service quality instrument for fitness centers, this study utilizes the Research and Development (R&D) Model. This model is designed to identify, test, and validate constructs used in measuring service quality perceptions. This approach is adapted from the models of Lam et al. (2007) and Walker et al. (2017), encompassing various dimensions of service quality such as facilities, programs, staff interactions, and the physical environment.

The main steps in the instrument development include:

Literature Review and Systematic Review: Identify and analyze previous studies to determine relevant dimensions of service quality.

Interviews and Group Processes: Use semi-structured interviews with managers, staff, and fitness center members to gather qualitative data.

Pilot Study: Involve Q-sort and Nominal Group Technique (NGT) processes to generate and screen instrument items. These techniques help in forming the initial scale and item analysis.

Main Study: Test the developed scale on a larger sample for validation and reliability.

### 2.2. Participants

This study involves several participant groups as follows: Fitness Center Customers: Members of fitness centers who are direct users of the services Fitness Center Staff: Includes instructors, receptionists, and cleaning personnel Fitness Center Management: Managers and owners of fitness centers responsible for operations. Industry Experts: Researchers and professionals with in-depth knowledge of the fitness industry. Students and the General Public: Community service users who have experience using fitness facilities.

The main sample in this study consists of 435 respondents from 35 fitness centers in Surabaya. The sample size was determined using Cochran's formula for an unknown population with a 95% confidence level and a 5% margin of error.

### 2.3. Data Analysis

Calculations were performed using AMOS, with the alpha level set at $p < .05$. The data analysis in this study was conducted through several stages, namely: Content Analysis: To identify the dimensions and items of service quality from the literature review and interview data. Item Analysis: Involves screening the item pool using simple frequency and simple correlation methods to ensure item relevance and consistency. Scale Formation: Conducting reliability tests using Cronbach's Alpha to evaluate the internal consistency of the scale. Factor analysis (CFA/EFA) was used to test the factor structure of the instrument, ensuring that the items in the scale measure the desired dimensions. Validation and Reliability: Utilizing techniques such as regression analysis to evaluate the construct and content validity of the instrument.

This process ensures that the developed instrument accurately and reliably measures the service quality of fitness centers and can be used to assess service quality perceptions in various fitness center settings in the Surabaya region.

## 3. Results

### 3.1. FITT-Q Scale Model Testing

#### 3.1.1. Validity Test

The validity test is used to ensure that the items in the service quality scale genuinely measure the intended aspects. The test conducted is factor analysis using KMO and Bartlett's Test of Sphericity to determine the suitability of the data for factor analysis. KMO measures sampling adequacy, while Bartlett's Test examines whether there are significant correlations among the variables (Hair et al., 2019; Tabachnick & Fidell, 2019). The results indicate that the data meets the requirements for factor analysis.

Validity Test (KMO and Bartlett's Test of Sphericity): The KMO value = 0.645 (>0.50), indicating adequate sample adequacy. Bartlett's Test produced a chi-square value = 13803.254, df = 276, p-value < 0.00, indicating significant correlations among the variables, making the data suitable for factor analysis. Communalities analysis shows the proportion of variance explained by the underlying factors (Field, 2018). The results indicate that nearly all items have high communalities values (>0.50), indicating that these items are well explained by the extracted factors. The identified factors explain a cumulative 66.194% of the total variance. Four factors with eigenvalues > 1 were retained for further interpretation, with the largest contribution from the first factor (22.357%).

Rotated Component Matrix shows that after rotation, the items are distributed into four main factors: Factor 1: Related to physical aspects and additional services. Factor 2: Pertains to equipment and programs offered. Factor 3: Includes main facilities and pricing. Factor 4: Relates to personnel responsiveness and environmental conditions. Items with high loadings on a single factor indicate consistency in measuring the intended aspect, while items with low or ambiguous loadings may be considered for deletion or revision.

Component Transformation Matrix shows how the original factors were rotated to produce clearer and more interpretable factors. This transformation helps validate the rotation results, ensuring that the resulting factor structure is easier to understand and interpret. The factor analysis results indicate that the instrument used has good construct validity, with items measuring similar aspects clustering around the same factor. Component rotation clarifies the factor structure, facilitates interpretation, and shows consistency in measuring service quality. The component transformation matrix ensures that the rotation results are valid and relevant, supporting the development of a better service quality instrument (Byrne, 2016).

#### 3.1.2. Reliability Test

Reliability is key to determining the consistency and stability of measurements in this study. The reliability test uses Cronbach's Alpha method with a value of 0.766, indicating that the instrument has acceptable internal consistency. This internal reliability indicates that the items in the scale correlate well with each other, supporting the stability and reliability of the results obtained (George & Mallery, 2019).

Reliability Test Results show Cronbach's Alpha: 0.766 (acceptable category) Number of Items: 24. The Measurement Model Test using Confirmatory Factor Analysis (CFA) shows that this analysis is used to ensure that the hypothesized service quality model fits the collected data. Figure 1. CFA evaluates various model fit indices such as GFI, AGFI, CFI, and TLI to measure model fit with the data (Kline, 2016).

CFA Results show GFI (Goodness of Fit Index): 0.804 (fair), AGFI (Adjusted Goodness of Fit Index): 0.893 (good) CFI (Comparative Fit Index): 0.965 (very good) TLI (Tucker-Lewis Index): 0.841 (fair, can be improved), Table 1. The CFA results show that the fitness center service quality instrument

model has a reasonably good fit with the observed data. The significant factor loadings indicate that the items consistently measure the same construct, supporting the reliability and construct validity of the model (Hair et al., 2019).

**Table 1.**
Goodness of fit index.

| No | Goodness of fit index | Cutt of value (Nilai batas) | Hasil Perhitungan | Kriteria |
|----|----------------------|------------------------------|-------------------|-----------|
| 1 | CMIN/DF | < 3 | 2.113 | Good fitt |
| 2 | CFI | ≥ 0.90 | 0.965 | Good fitt |
| 3 | TLI | ≥ 0.90 | 0.841 | Marginal fitt |
| 4 | NFI | ≥ 0.90 | 0.889 | Marginal fitt |
| 5 | IFI | ≥ 0.90 | 0.906 | Good fitt |
| 6 | RMSEA | ≤ 0.08 | 0.019 | Good fitt |

**Note:** N = 435; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square; RMSEA = root mean square error of approximation; CI = confidence interval; BIC = Bayesian information criterion.

### 3.2. Factor Correlation Analysis

The correlation between factors measures the relationship between various dimensions in the model, such as Physical Environment, Program, Personnel, and Support. All inter-factor correlations in this model show statistically significant relationships ($p < 0.001$), indicating that the relationships among latent variables in this model are not occurring by chance. Table 2.

### 3.4. Validity Test Among Sociodemographic Variables

This test is used to evaluate differences in service quality perceptions among various sociodemographic groups. The results indicate that the service quality instrument can be applied uniformly across different sociodemographic groups, ensuring the external validity of this study.

This study demonstrates that the service quality instrument used has an adequate level of reliability and validity. The CFA test and correlation analysis support the model's fit with the observed data, indicating that this instrument can be effectively used to measure service quality in fitness centers. The results can serve as a basis for further improvements in developing services that are more responsive to customer needs.
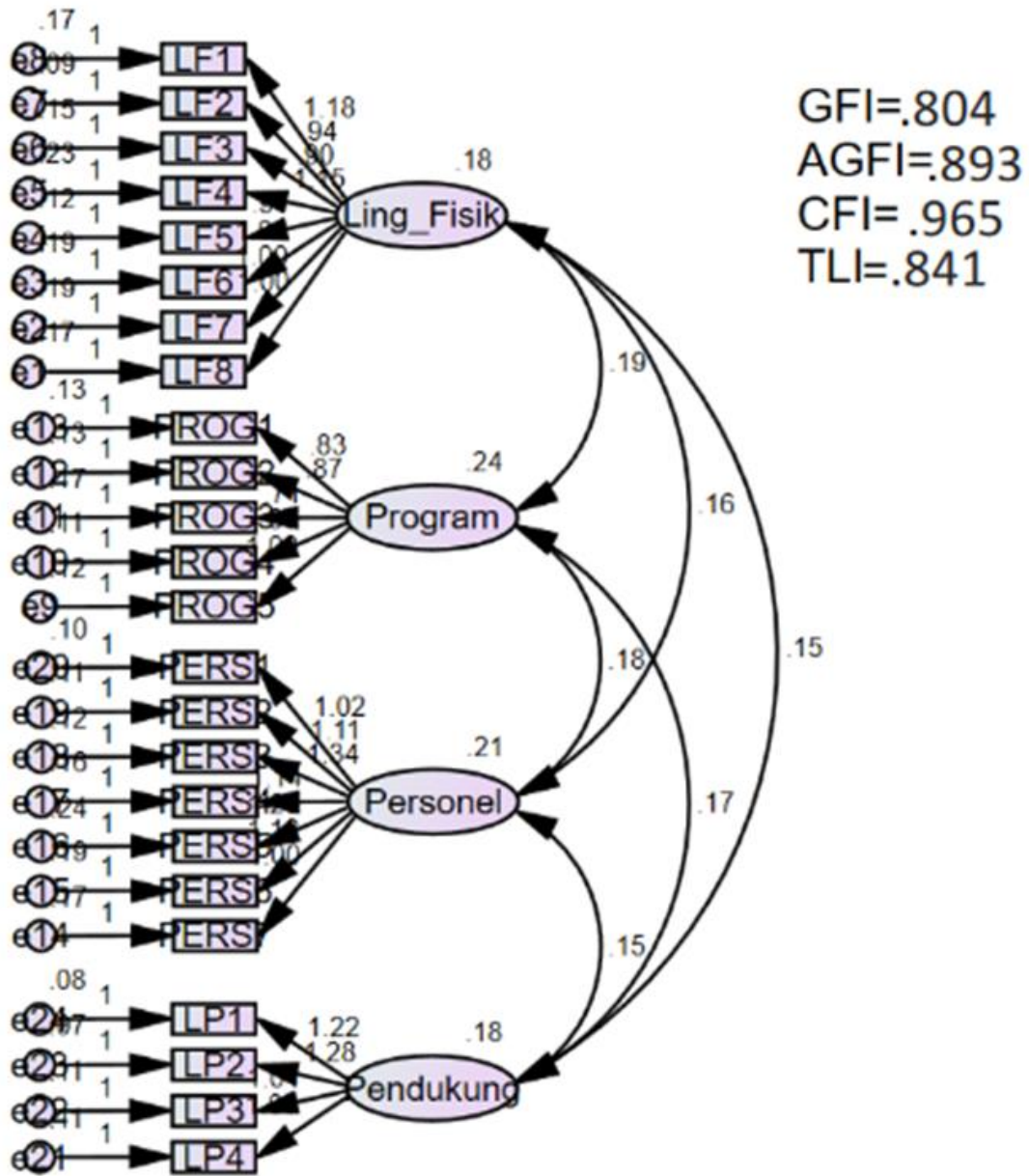
**Figure 1.**
Results of the confirmatory factor analysis testing the FITT-Q scale.

Note:    N = 151. df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square; RMSEA = root mean square error of approximation; CI = confidence interval; BIC = Bayesian information criterion.

**Table 2.**
Exploratori factor analysis.

| | Items | Statement | Faktor loading | Eigenvalue | Explanable variations | Measurement scale and literature review |
|---|---|---|---|---|---|---|
| Physical environment (F) | Physical environment 1(F1) | Facilities appear to be complete and professional | 0.961 | 5.468 | 22.785 | Wang et al, 2021; Waker et al, 2017 |
| | Physical environment 2(F2) | Modern and diverse equipment | 0.803 | | | |
| | Physical environment 3(F3) | Cleanliness and coolness. | 0.792 | | | |
| | Physical environment 4(F4) | Temperature and lighting | -0.635 | | | |
| | Physical environment 5(F5) | Locker room and shower facilities | 0.794 | | | |
| | Physical environment 6(F6) | Facilities are easily accessible | 0.837 | | | |
| | Physical environment 7(F7) | Membership Fee | 0.948 | | | |
| | Physical environment 8(F8) | Security | 0.801 | | | |
| Program (G) | Program 1 (G1) | Diverse programs | 0.751 | 4.456 | 18.568 | Eskiler & Safak, (2022); Xu et al, 2021 |
| | Program 2 (G2) | Diverse and culturally-inclusive program content | 0.431 | | | |
| | Program 3 (G3) | Programs are conducted on schedule | 0.725 | | | |
| | Program 4 (G4) | Timely schedule notifications | 0.842 | | | |
| | Program 5 (G5) | Number of groups in each program | 0.932 | | | |
| Personal (P) | Personal 1 (P1) | Knowledge and skills of personnel | 0.760 | 3.289 | 13.706 | Eskiler & Safak, (2022); Wu & Cheng, (2018). |
| | Personal 2 (P2) | Neat appearance of personnel | 0.782 | | | |
| | Personal 3 (P3) | Ethical and kind behavior of personnel | -0.537 | | | |
| | Personal 4 (P4) | Personnel are responsive to suggestions and complaints | 0.732 | | | |
| | Personal 5 (P5) | Privacy of customer information is maintained | 0.750 | | | |
| | Personal 6 (P6) | Feedback provided to members about their progress | 0.798 | | | |
| | Personal 7 (P7) | Effective motivation for members | 0.589 | | | |
| Support services. (L) | Support services 1 (L1) | Food and beverage services | 0.802 | 2.672 | 11.135 | Wang et al., (2021); Çevik & Şimşek, (2020) |
| | Support services 2 (L2) | First aid for accidents | 0.574 | | | |
| | Support services 3 (L3) | Appropriate background music | .835 | | | |
| | Support services 4 (L4) | Consultation with specialists (Doctors, nutritionists) | .756 | | | |

## 4. Discussion

This research aims to assist fitness centers in Surabaya in addressing service quality issues by formulating a service quality measurement model based on previous research findings and content analysis from 435 customer reviews of fitness center services in Surabaya. We identified several new items not included in similar scales developed in Western studies. After rigorous investigation, the Fitness Center Service Quality Instrument, the FITT-Q Scale, we developed, demonstrated good measurement properties for four factors: Physical Environment, Program, Personnel, and Support Services. This measurement model, which includes factors predicting customer satisfaction, has profound implications for future research on fitness center services and managerial practices in Surabaya.

### 4.1. Theoretical Contribution

The theoretical contribution of this study is a new, innovative, and psychometrically robust measure of service quality for fitness centers. Most researchers agree that facilities, programs, and staff are critical to the operation of fitness centers as they are the foundation of service delivery in these centers (León-Quismondo et al., 2020). Previous service quality measurement models (e.g., SERVQUAL, SAFS, QUESC, SQAS, SFCS) all include facilities, instructors, and programs as essential elements that attract new members to fitness centers and help retain existing ones (Qian & Zhang, 2016).

In this study, identified factors such as Facility Function, Program Operation, Instructor Quality, and Staff Performance in the resulting scale, and the findings that these factors predict consumer satisfaction have confirmed and further reinforced the relevance and importance found in previous research findings (Polyakova & Ramchandani, 2020). The scope of examining fitness center service quality continues to evolve and needs to be adjusted to the changing social environment over time. Compared to consumer knowledge two decades ago, today's fitness club members are more aware of consumer rights, more informed about industry practice standards, more knowledgeable about their consumption options due to the availability of information through the internet and digital technology, more communicative with other consumers through available social networking platforms, and more willing to switch to other services in a highly competitive market when their needs and desires are not met (Xu et al., 2021). Therefore, it is not surprising that one new factor, programs incorporating local cultural elements, emerged in the study's findings, based on comments made voluntarily by consumers through interview studies and further confirmed through a rigorous deductive reasoning process that included exploratory factor analysis and structural relationship examination. This factor's findings are a significant contribution of this study to the existing literature that has suggested the potential existence of this perspective but lacked sufficient empirical evidence (Xu et al., 2021).

### 4.2. Practical Findings

The study's findings reveal that safe and high-quality equipment and advanced facilities (e.g., showers, toilets, locker rooms, swimming pools) remain key considerations for fitness club members when choosing and maintaining membership (Qian & Zhang, 2016). It is essential to emphasize that while consumer attention and demand may evolve over time, their expectations for the basic functions of fitness clubs remain stable. For club managers, high-quality equipment and facilities are fundamental elements in recruiting and retaining club members (Polyakova & Ramchandani, 2020). To meet the diverse needs of members, group programs need to be well formulated, offered, and delivered. Most items in this factor are included in previous studies, such as program variety and rationalization of arrangements and scheduling. However, one new item found for this factor in the current study represents program innovation aimed at enhancing customer experience (Xu et al., 2021). One explanation is that in today's health and fitness clubs, like in many community service areas, aerobic exercise programs are now rapidly developing and beginning to incorporate movement styles and music leading to local cultural elements such as gemufamire and regional dances.

When a club fails to meet its professional obligations or does not resolve customer complaints promptly and satisfactorily, unresolved service errors occur. The effectiveness and efficiency in resolving customer complaints positively influence individual word-of-mouth communication and, ultimately, membership loyalty (Xu et al., 2021). Handling customer complaints can be an opportunity to communicate with customers, make amends, and enhance mutual trust between customers and club management. Effective service recovery can eliminate consumer dissatisfaction and help consumers rebuild loyalty after a service failure. It is important to remember that customers evaluate service recovery behavior from outcome fairness, process fairness, and interaction fairness when fitness clubs handle customer complaints (Tsai et al., 2014). Employees should undergo formal training to master emergency skills. They need to know the standard protocols when facing membership complaints, develop professional skills to handle complaints, sincerely communicate procedures and resolution schedules to the involved members, and seek effective improvement solutions (Xu et al., 2021).

*4.3. Service Quality Scale*

Our service quality scale can be adopted to help identify the impact of interactions between customers and service providers at fitness centers on personal, organizational, and collaborative outcomes. Overall, our findings contribute to the conceptual and empirical understanding of service quality in the fitness industry, revealing the axiological effects that service quality has on service outcomes. These findings support the premise that service quality is multidimensional. Although facility function, program operation, instructor quality, and staff performance are common factors in most existing studies, our measure is the first to include service recovery and service assurance, specifically applied to the fitness industry in Surabaya. Thus, our scale provides a unique understanding of how consumers perceive service initiatives and how these initiatives elicit favorable consumer evaluations (Polyakova & Ramchandani, 2020).

Our findings also have practical significance. This new measure is expected to help fitness professionals assess service effectiveness and measure progress toward high service quality. Given that the four factors in this model emerged from customer comments, fitness club managers should pay special attention. However, providing perfect service is a daunting task. Club managers should study their unique situations to determine how much attention is needed for significant factors (i.e., physical environment, program, personnel, and support facilities). These findings indicate that customers expect clubs to be consistent with basic ethical norms, psychological contracts, and social responsibility. Clubs must adhere to mandatory regulations and certification procedures (e.g., relevant laws and regulations, safety standards, and guidelines), and managers should make special efforts to enhance security services to achieve customer satisfaction. Additionally, these findings highlight the positive impact of service quality on satisfaction. When assessed positively, service quality can enhance the competitive advantage of service providers. Therefore, industry professionals should consider improving service quality, particularly in the domains of physical environment assurance, program, personnel, and support facilities (Xu et al., 2021).

## 5. Limitations

This study focuses solely on fitness centers in Surabaya, which may have unique characteristics that cannot be generalized to other cities or countries. The local cultural factors identified in this research might not be relevant or could have different impacts elsewhere.

Although the FITT-Q Scale demonstrates good measurement properties for the four factors, there remains the possibility that some aspects of service quality have not been identified or measured adequately. The validity and reliability of this instrument may need further testing in various contexts and with more diverse populations.

## 6. Recommendations

Conduct similar research in other cities or countries to see if these findings and the measurement model can be applied more broadly. Use longitudinal methods to observe how perceptions of service quality change over time. Examine how technological advancements and the latest fitness trends influence customer expectations and satisfaction in fitness centers.

## Copyright:

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