

Assessing fitness centers service quality: gender-specific insights from importance-satisfaction analysis

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Abstract - Aim: The assessment of service quality and customer satisfaction in the fitness industry has been a central focus for both researchers and practitioners, particularly in efforts to retain and attract new users. However, limited attention has been given to the evaluation of gender differences in perceptions of fitness centers. This study addresses this gap by examining the most influential criteria for fitness center quality, with a focus on the perceptions of male and female members. **Methods:** A structured questionnaire comprising 23 criteria was completed by 371 of 400 fitness center users. Importance-Satisfaction Analysis (ISA), supplemented by the Tarrant & Smith procedure and Mann-Whitney U tests, were used to analyze most influential criteria in fitness centers in Brazil. **Results:** The results indicate that both male and female members consider equipment-related factors along with service value, as the most critical quality indicators. Significant gender differences emerge in areas such as instructor-related factors (e.g., politeness, quality of information, responsiveness to problems and complaints, and availability to answer questions), pricing, equipment location, and waiting time to begin exercises. **Conclusion:** The study indicates that conducting an Importance-Satisfaction Analysis segmented by gender provides valuable insights that are often missed when both groups are analyzed collectively. This disaggregated approach allows managers to make better decisions by addressing the specific needs and expectations of each group. By systematically analyzing user behavior and related criteria, managers gain insights to improve customer acquisition and retention, supporting public health and well-being.

Keywords: fitness centers, service quality, sport management, gender differences, customer satisfaction, Importance-satisfaction analysis, fitness clubs, physical exercises, fitness attributes.

Introduction

Physical inactivity and a sedentary lifestyle are major public health concerns due to their harmful consequences, such as obesity, diabetes and hypertension. Issues related to a sedentary lifestyle appear to have intensified during the COVID-19 pandemic¹, since during this period, fitness centers were required to adhere to quarantine regulations for environmental health protection and restrictions on public activities².

In Brazil, recent data reveal an accelerated process of population aging and the feminization of this aging process³. More specifically, the 2022 Demographic Census data⁴ reveal that 15.8% of the Brazilian population (approximately 32.1 million people) is 60 years old or older, with women forming the majority of the elderly population and estimates indicate that they live, on average, five to seven years more than men. The data also indicates that the mortality rate from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases in people aged 30 to 69 in 2022 is higher for men (17.2%) than for women (11.9%).

Whilst the concern with sedentarism and the pursuit for health are fundamental in the introduction of the physical exercises in the daily routine of the population^{5,6} and the female profile is becoming increasingly more frequent in these sports services^{7,8}, practicing supervised exercise in fitness centers is a way for people to stay active and healthy⁸.

However, there are barriers or demotivating elements to practicing physical activities in fitness centers, such as lack of time and fatigue⁹. Regarding women activities, studies^{10,11} indicate that during their daily routine they make several trips, such as to shop, take children to school, take elderly or sick people to hospitals, take care of household activities and work, among other tasks.

In the Brazilian context, women play an important role in the population aging process, as elderly women are generally the main caregivers for their elderly husbands, and it is very common for elderly grandmothers to take care of their grandchildren so that their children can study and/or work³. Furthermore, being able to carry out basic and essential activities (walking through the rooms of the

house, taking a shower and eating, for example) on your own at an advanced age, and even helping other people, becomes a great challenge. Therefore, it is possible that these circumstances reduce women's availability and interest in practicing activities in fitness centers, influencing the perception of the quality of services provided in fitness centers.

Given the possible difficulties and restrictions on female participation in fitness centers, an important step recommended to managers is to investigate aspects that contribute to retaining this public, preventing them from stopping attending fitness centers. This work aims to contribute to this investigation and answer the following research question: *What are the most influential criteria for the quality of fitness centers regarding gender perceptions?* In a study conducted in Brazilian fitness centers, we sought to determine the characteristics, the most (least) important aspects and the aspects that provide more (less) satisfaction according to the perception of fitness centers users in terms of gender, classifying them into four regions of management actions through Importance-Satisfaction Analysis.

Theoretical framework

Assessing service quality in the fitness industry

Worldwide, the assessment of service quality and customer satisfaction in fitness clubs, gyms, fitness centers, sports centers, and health clubs has attracted significant attention from researchers and practitioners. Over the past 40 years, numerous scientific studies have focused on developing scales and instruments that incorporate various dimensions and variables related to this subject.

In this context, the Scale of Attributes of Fitness Services - SAFS¹² was developed to measure the extent to which each attribute or dimension proposed in the theoretical model influenced customers' choice of fitness centers. The study was conducted in Canadian fitness centers and the resulting model consisted of five dimensions that represent the members' experience in fitness centers: Primary core professional services (e.g., qualification of personnel who analyze member fitness, quantity and variety of fitness classes, motivation provided by instructors); Primary core consumer services (e.g., quantity and variety of competitions organized, price of renting courts, ease of reserving courts); Primary peripheral services (e.g., respect shown by receptionists, qualification of nursery staff, location of the reception); Primary facilitating goods (e.g., club openings hours, cleanliness of facilities and equipment, size of facilities, type of weight training equipment); and Secondary consumer services and facilitating goods (e.g., décor of the bar, helpfulness of waiters, menu variety). The study revealed that all groups of

respondents ranked secondary services and facilitating goods as the least important dimensions.

The QUality Excellence of Sports Centers (QUESC)¹³ was developed through a study conducted with 271 members of Korean sports centers. The study identified twelve key factors for assessing service quality in sports centers: environment, staff attitude, reliability, information-sharing, programming, personal consideration, pricing, exclusivity, ease of mind, convenience, stimulation, and social opportunities.

A study across three Greek fitness centers was conducted to identify the key dimensions influencing customer satisfaction¹⁴. The resulting scale comprised 21 variables, organized into five dimensions: Facilities/programs refers to desirable features of the fitness center and its staff; Individual/Psychological describes the perception of exercising as interesting, intellectually stimulating, and providing a sense of involvement; Relaxation highlights exercising as a way to relax and disconnect from daily responsibilities; Social emphasizes physical activity as an opportunity for socializing and making friends, and; Health/Fitness represents the alignment of exercise with personal health and fitness expectations.

The Scale of Quality in Fitness Services (SQFS)¹⁵ was developed to assess service quality within fitness centers. The study was conducted at two fitness centers in the midwestern United States, resulting in a scale comprising 35 items distributed across nine dimensions of service quality: service climate, management compromise to service quality, programs; interpersonal interaction, task interaction, physical environments, other customers, service failures/recovery; and perceived service quality.

The Service Quality Assessment Scale (SQAS)¹⁶ was developed to assess the service quality of health and fitness clubs. Through the application of Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and gender-based invariance testing, the study identified six key dimensions: staff, program, locker room, physical facilities, workout facilities, and child care, comprising a total of 31 variables.

The Perceived Quality Assessment Questionnaire for Sports Services (CECASDEP) scale¹⁷ was developed to evaluate the quality of services in Spanish fitness centers. Through factor analysis, six key dimensions of service quality were identified: sports facilities, member attention, sports environment, locker room conditions, activity programming, and instructor performance.

Similarly, the Service Quality Scale for Fitness Centers (SQS-FC)¹⁸ was developed to evaluate service quality in the context of Turkish fitness centers. This scale identified 25 variables grouped into four dimensions: personnel, physical environment, supporting services, and programs. In addition to factor analysis, the study incorporated Importance-Performance Analysis (IPA) to provide a more nuanced evaluation of service delivery.

To address the need for a concise yet robust instrument, the Qsport-14 scale¹⁹ introduced to assess the quality of services in physical activities and fitness centers. The study was conducted in a large Turkish fitness center and the resulting scale consists of just 14 items distributed across three dimensions: staff, program, and facilities, derived through exploratory factor analysis. This scale aimed to provide a streamlined tool for practitioners and researchers alike.

In a study conducted by Nuviala et al.²⁰ in Spanish sport centers, structural equation modeling was employed to investigate the relationship between service quality and user satisfaction, as well as to explore the relationship between perceived value and customer satisfaction. The data collection instrument used was the EPOD2 scale²¹, which is composed of 25 items distributed across three distinct dimensions: perceived quality; user satisfaction; and service value. The results of the analysis emphasized the complex, multidimensional structure inherent in customers' evaluations of fitness service quality.

In the Brazilian context, Freitas and Lacerda²² used Factor Analysis and Quartile Analysis to identify 23 variables distributed into four dimensions (workout facilities & price; staff; layout & facilities; ambient conditions & cleanliness) to assess service quality in Brazilian fitness centers. This research underscores regional differences in user expectations and perceptions of service quality in fitness centers. Further, this study also attempts to focus specifically on the subset of small and medium sized fitness centers, a choice aligned with current market trends that bypass the established practices in large fitness centers chains.

Likewise, Xu et al.²³ proposed a model comprising 27 items grouped into six dimensions (service assurance, service recovery, facility function, program operation, instructor quality, and staff performance). The study, conducted across 30 Tera fitness centers in Shanghai, China, highlights the critical role of high-quality service delivery, service recovery, and service assurance. The findings also identify specific areas requiring improvement within Chinese fitness centers.

Expanding on prior research, Addolorato and Hormigón-Gimeno²⁴ combined the EPOD2 instrument with the Dropout Reasons Scale to investigate not only perceived service quality and satisfaction but also the motivations behind membership attrition in a boutique fitness center in Zaragoza (Spain). As a result, the majority of users evaluate the service positively, particularly highlighting the quality of staff interactions; however, communication issues receive comparatively lower ratings. Increased satisfaction is positively correlated with greater user loyalty, while primary reasons for service discontinuation include geographical distance and facility overcrowding.

More recently, the FITT-Q Scale (Fitness Center Service Quality Instrument)²⁵ was developed as an upda-

ted instrument to measure service quality in fitness centers. The study conducted across 35 fitness centers in Surabaya, Indonesia, resulted in a measurement model which encompasses four key dimensions: physical environment, program, personnel, and support services. These dimensions reflect the dynamic and evolving expectations of fitness center users.

Despite numerous studies conducted in the field, there is still no consensus among researchers and practitioners on the most suitable scale and set of criteria (items or variables) for evaluating service quality and user satisfaction in fitness centers. More specifically, the identification of the key criteria for evaluating service quality in fitness centers from the users' perspective, as well as determining which criteria most significantly influence perceived service quality and user satisfaction, remain open questions that require further scholarly investigation.

Gender differences in service quality assessment in fitness centers

With the growth of the fitness industry in recent decades, scientific research has increasingly focused on understanding the key factors that motivate (facilitators) or discourage (barriers) female and male users from engaging in physical activities at fitness centers. In a context where the majority of society seeks both physical and psychological well-being through the practice of physical activities⁷, the presence of women in fitness centers is becoming increasingly common. Their primary goal is to enhance their physical appearance and health²⁶. Further, among Brazilian women aged 18 to 50, body aesthetics is the primary motivation for engaging in physical activities, with the fitness center's location being the key factor in their choice⁸.

While the evaluation of service quality and user satisfaction in fitness centers has attracted increasing attention from both researchers and practitioners, empirical and scientific investigations specifically focused on assessment of service quality in fitness centers regarding gender perceptions remain scarce.

In this context, the study conducted in Greek fitness centers²⁷ identified several statistically significant differences in service quality expectations between male and female users. As part of the findings, the study revealed that female users exhibit higher expectations regarding service quality, particularly in relation to the tangible aspects of sports facilities, staff attitudes and competencies, as well as the availability and delivery of programs. Moreover, statistically significant gender differences were observed in perceptions of schedule convenience and transportation access to the fitness center. Female users also demonstrated a stronger preference for a greater variety of sports activities and for programs designed around play or goal differentiation. Conversely, male users showed significantly greater interest in the

availability of membership packages, the option to invite non-members, opportunities for social interaction, and the provision of snacks.

In a Spanish context, a study conducted in the Castilla-La Mancha region²⁸ revealed that female users attributed significantly greater importance than male users to 16 out of 25 evaluated attributes when assessing the quality of fitness center instructors. These attributes included musical proficiency, dedication, empathy, honesty, punctuality, cordiality, politeness, friendliness, personal image, physical condition, availability, dynamism, ethical conduct, communication skills, motivation, and overall positive disposition.

Similarly, a study conducted on Spanish fitness centers found²⁹ that, in general, men tend to assign lower ratings to both the importance and performance of most service attributes compared to women. Furthermore, women tend to place greater importance on personal training services and positive interactions with staff. As a result, female users often experience higher satisfaction with the outcomes achieved through their instructors.

More recently, AbouRokbah and Salam³⁰ conducted a study in female fitness centers in Saudi Arabia to investigate the factors influencing service quality in relation to customer satisfaction. The study revealed that five SQAS dimensions (staff, program, locker room, physical facilities, workout facilities) positively affected the quality of fitness centers.

Thus, given the relevance of the subject and the scarcity of studies in this area, the present study seeks to contribute to bridging this gap by analyzing the attributes that characterize the profile of female and male fitness center users, as well as by examining the criteria that most significantly influence service quality, according to the perceptions of both genders within the Brazilian context.

Materials and methods

Participants

Data and judgments were collected from users at four fitness centers in Campos dos Goytacazes, a city in Brazil with approximately 500,000 inhabitants. Convenience sampling was chosen over probability sampling due to the unavailability of the entire population of fitness center users during the data collection period. Participants were approached in person at the fitness centers. After explaining the purpose of the research, the questionnaires were distributed, with the researcher available to answer any questions or provide clarification. Out of 400 questionnaires distributed, 371 were fully completed.

The questionnaire

In this study, the questionnaire developed by Freitas and Lacerda²² was applied to assess the quality of services

provided by fitness centers. The questionnaire includes 23 criteria derived from various scientific studies and organizes them hierarchically into four dimensions (Figure 1). The questionnaire is composed of two parts. The first part collects demographic information to identify the participants' characteristics (gender, age, marital status, and education), usage patterns (length of time practicing physical activities at the fitness center and frequency), and motivational factors (such as aesthetics, quality of life, health, physical well-being, and relaxation).

In the second part, participants (fitness center users) rate the importance of each criterion for fitness center services and express their satisfaction with the services provided. Importance ratings range from 0 (unimportant) to 10 (very important), while satisfaction ratings range from 0 (very unsatisfied) to 10 (very satisfied). Figure 1 outlines the criteria and dimensions included in the questionnaire.

Workout facilities & price (D_1) is composed of seven criteria and it assumes the user's tendency to pay the center membership may be greatly influenced by the way that he/she comprehends the criteria associated with equipment at the fitness centers. More specifically, the criteria related to the equipment refers to maintenance (V_1), preservation (V_2), functionality (V_3), variety (V_4) of equipment and the quantity of equipment available (V_5). The fitness centers should provide modern equipment, capable of allowing users to perform several and varied exercises, and also provide equipment in sufficient quantity to avoid the formation of queues of users^{18,21,31}. However, the fitness equipment is often expensive and its upgrade is not a simple task for most of fitness centers, especially for those located in low-income or middle-income countries. In this context, the maintenance and preservation of equipment must be up to date so that it is possible to maintain and attract new users²². Value of service (V_6) measures the compatibility of the amount paid by user with the service provided. Price (V_7) refers to the amount paid by user in a general way. We assume that V_6 and V_7 complement each other, as a given fitness center may charge a good price for services, but the price of services may not meet users' expectations regarding the services provided.

Staff (D_2) concerns of seven criteria (V_8 to V_{14}) which essentially represent the instructors' attitudes and performance, and two criteria respectively related to Parking lot (V_{13}) and Location (V_{14}). The location of the fitness center and the parking lot have been considered in previous studies suggesting that these variables may be relevant for people when choosing a fitness center. Instructors must be courteous and polite to users, assisting them during training through clear information about the correct use of exercises and equipment, in order to avoid injuries. Thus, instructors are expected to be close to the equipment and in sufficient quantity^{32,33}.

Layout & facilities (D_3) consists of five criteria (V_{15} to V_{19}) which concerns to the idea of the user who is

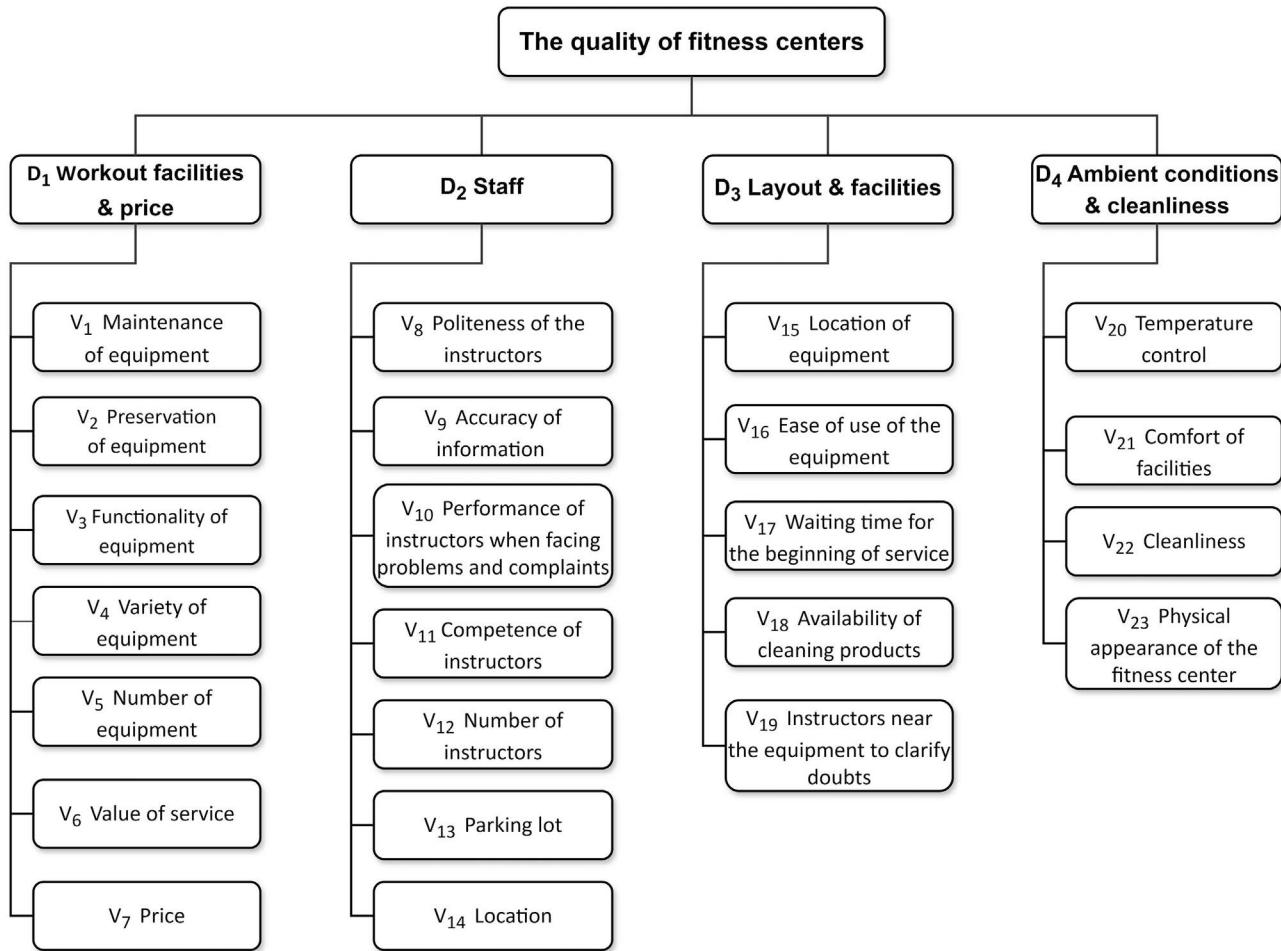


Figure 1 - Hierarchy for assessing the quality in fitness centers.

already in the fitness center not having to wait for practicing the physical activities. Thus, the layout of equipment should be designed to maximize the use of them, to facilitate the movement of people in the environment and to prevent accidents^{16,34}. Equipment must be easy to use and, in case of doubts by users, instructors must be close by to assist them. The waiting time for carrying out the exercise must be minimal and the equipment should be clean. However, especially in peak times, it becomes more difficult for the cleaning staff to carry out their work perfectly. In such a situation, cleaning products must be available so that users can sanitize the equipment (benches, seats and mats), if necessary.

Ambient conditions & Cleanliness (D₄) refers four criteria (V₂₀ to V₂₃) related to the overall environmental and cleanliness conditions of the fitness center. Temperature control is important across several scales, as the thermal comfort of an environment directly influences user performance^{13,16,18,33}. The criterion of physical appearance ranges from the maintenance of fitness centers³⁵ to the beauty of both internal and external architecture, and also includes the professional appearance of the environ-

ment¹⁸. In the CECASDEP scale, space and comfort are also emphasized. Cleanliness is a key criterion in several studies^{12,23,31,35,36}. Users are primarily concerned with the cleanliness of the environment, the hygiene of fitness equipment, and the proper organization of weightlifting accessories (bars, weight plates, barbells, dumbbells, etc.). Since it is nearly impossible for staff to maintain perfect cleanliness during peak times, it is recommended that users develop the habit of placing accessories in their designated locations after use, helping to keep the area tidy.

Procedure

Cronbach's alpha coefficient was used to assess the reliability of the questionnaire. Additionally, item-total correlations were examined to identify criteria whose removal could enhance the questionnaire's overall reliability.

The Importance-Satisfaction Analysis (ISA) is similar to the Importance- Performance Analysis (IPA), developed by Martilla and James³⁷. Customer satisfaction is how well a product or service meets customer needs and

expectations^{38,39}. It strongly influences purchasing decisions and, perhaps, customers may choose services that offer more satisfaction over those with better performance⁴⁰. Satisfied fitness centers members are likely to demand the same service in future, recommending it to others and having positive attitudes toward the business⁴¹, while dissatisfied customers often spread negative feedback, which can quickly harm the fitness center's reputation⁴². However, most unhappy customers don't complain - they do not tell the company about the problems and simply stop using the service. Therefore, fitness centers should regularly measure customer satisfaction to understand their performance and find ways to improve. For these reasons, this study preferred to use ISA rather than IPA to more effectively identify the most critical criteria that should be prioritized to enhance service quality.

ISA involves constructing a two-dimensional graph that divides into four quadrants: Concentrate Here (CH) includes criteria that are both important and where the users' satisfaction degrees are low. Focusing improvement efforts on these criteria is likely to yield the greatest impact. Keep Up the Good Work (KW) contains criteria that are important, and the users' satisfaction degrees are high. Fitness centers should continue with their current strategies to maintain this level of satisfaction. Possible Overkill (PO) contains criteria where users' satisfaction degrees are high, but their importance is relatively low. Efforts to improve these criteria can be scaled back. Low Priority (LP) includes criteria that are neither particularly important nor satisfactory. As a result, they require minimal attention.

For each criterion j (where $j = 1, 2, \dots, m$), we estimate the average importance \bar{I}_j and the average satisfaction degree \bar{S}_j . The traditional IPA, as proposed by Martilla and James³⁷, establishes that the four quadrants are of equal size, with the intersection of the two axes centered at the midpoint of both the importance and performance scales.

To prevent incorrect managerial decisions - especially when a criterion is near the boundary of a quadrant or close to the graph's vertex - the Tarrant & Smith (TS) procedure⁴³ is recommended⁴⁴. The overall importance of the criteria is denoted as \bar{I} , and the overall satisfaction degree is denoted as \bar{S} ; together, these constitute the vertex of the ISA-TS graph.

Finally, a non-parametric test (Mann-Whitney U test) was used to examine the existence of significant differences among the perspective of female and male users concerning the importance scores and the satisfaction scores. The test may be used to verify whether two independent groups have been drawn from the same population. Thus, for all criteria, the null hypothesis (H_0) is that male and female scores have the same mean ($H_0: \mu_{\text{Male}} = \mu_{\text{Female}}$), against the alternative hypothesis

(H_1) that male and female scores do not have the same mean ($H_1: \mu_{\text{Male}} \neq \mu_{\text{Female}}$). Given a significance level (α), the test consists on rejecting H_0 if $p\text{-value} \leq \alpha$.

Data analysis

The study sample consisted predominantly of women (56%) compared to men (44%). Table 1 highlights notable differences in marital status distribution between female and male participants, particularly among single individuals (female: 49.5%; male: 61.1%) and married individuals (female: 45.6%; male: 31.5%).

Significant differences were observed in the age distribution between female and male users. The ages of female participants ranged from 20 to 71 years, with 42.6% aged between 31 and 40 years. In contrast, male participants ranged from 13 to 86 years, with a more balanced age distribution across the 20 to 50-year categories. For both genders, the percentage of users declined sharply after age 50.

In terms of educational attainment, the majority of participants reported having completed either high school or university education (female: 69.9%; male: 74.7%). The frequency of fitness center usage varied, with participants categorized as light users (1-2 times per week; female: 1.5%, male: 2.5%), moderate users (3-4 times per week; female: 36.4%, male: 31.2%), and heavy users (5-7 times per week; female: 62.1%, male: 66.3%).

Evening was the preferred time for fitness center use among both women (47.6%) and men (50%), while men more commonly frequented fitness centers in the morning and women in the afternoon. Membership duration varied from less than six months (female: 29.1%, male: 35.2%) to over four years (female: 23.7%, male: 14.2%), with the majority of participants being members for one year or less (female: 53.9%, male: 58.7%).

The primary motivation for both men and women to engage in fitness center activities was self-motivation, followed by encouragement from friends for men and from family for women. The main reasons cited for exercising included improving quality of life, weight control, enhancing self-esteem, achieving physical fitness, and aesthetics. Bodybuilding was the most popular activity for both men (79.0%) and women (59.3%), with women participating more frequently in aerobic activities (e.g., spinning, running, dancing) compared to men.

Table 1 shows the Average Importance (\bar{I}_i) of each criterion and the Average of Satisfaction degree on each criterion V ($V = 1, 2, \dots, 23$). Table 1 shows the Cronbach's α values per Dimension (α_D), the α value if a criterion V is excluded from the dimension (α_{Ve}) it belongs, and the criterion-total correlations (ctc) are also presented. The Cronbach's α analysis for importance scores (α_I) and satisfaction scores (α_S) on each dimension resulted in these values: Workout facilities & price ($\alpha_I = 0.89$;

Table 1 - Average importance, average satisfaction, Cronbach's α and item-total correlations.

D	Cr.	Importance						Satisfaction						TS	Decision	
		(\bar{I}_j)	$(\bar{I}_j)_i$	$(\bar{I}_j)_s$	αD	αVe	etc		(\bar{S}_j)	$(\bar{S}_j)_i$	$(\bar{S}_j)_s$	αD	αVe	etc		
D ₁	V ₁	9.64	9.59	9.69	0.89	0.86	0.80		8.40	8.30	8.49	0.89	0.87	0.77	x	CH-KW
	V ₂	9.57	9.51	9.62		0.86	0.77		8.38	8.28	8.48		0.87	0.71	x	CH-KW
	V ₃	9.66	9.61	9.71		0.87	0.73		8.64	8.55	8.72		0.88	0.70		KW
	V ₄	9.58	9.52	9.63		0.88	0.69		8.33	8.24	8.43		0.87	0.71		CH
	V ₅	9.59	9.54	9.64		0.88	0.64		8.21	8.12	8.30		0.89	0.59		CH
	V ₆	9.46	9.40	9.51		0.88	0.65		8.24	8.15	8.34		0.87	0.71		CH
	V ₇	9.33	9.26	9.40		0.89	0.58	x	8.19	8.09	8.29		0.88	0.65		CH-LP
D ₂	V ₈	9.72	9.68	9.77	0.77	0.74	0.67		9.16	9.08	9.24	0.76	0.72	0.56		KW
	V ₉	9.53	9.48	9.59		0.72	0.70		8.51	8.41	8.60		0.68	0.71	x	CH-KW
	V ₁₀	9.34	9.27	9.41		0.71	0.71	x	8.24	8.14	8.34		0.67	0.73		CH-LP
	V ₁₁	9.49	9.42	9.56		0.73	0.58		8.47	8.37	8.57		0.68	0.69	x	CH-KW
	V ₁₂	9.24	9.16	9.32		0.72	0.60		8.14	8.03	8.24		0.70	0.58		LP
	V ₁₃	8.56	8.44	8.68		0.82	0.35		7.49	7.34	7.63		0.84	0.11		-
	V ₁₄	9.41	9.35	9.48		0.79	0.25	x	9.32	9.26	9.39		0.77	0.21		-
D ₃	V ₁₅	9.22	9.14	9.29	0.83	0.77	0.72		8.75	8.67	8.82	0.77	0.70	0.64		PO
	V ₁₆	9.35	9.28	9.42		0.78	0.69	x	8.69	8.61	8.77		0.70	0.62		KW-PO
	V ₁₇	9.21	9.14	9.29		0.82	0.55		8.65	8.56	8.74		0.73	0.52		PO
	V ₁₈	9.27	9.19	9.35		0.80	0.62		8.35	8.25	8.45		0.73	0.51	x	LP-PO
	V ₁₉	9.33	9.25	9.40		0.81	0.58	x	7.85	7.73	7.96		0.76	0.48		CH-LP
D ₄	V ₂₀	9.23	9.15	9.31	0.68	0.58	0.53		8.28	8.19	8.38	0.80	0.77	0.58		LP
	V ₂₁	9.32	9.26	9.39		0.55	0.58	x	8.37	8.28	8.46		0.70	0.70	x	CH-LP-PO
	V ₂₂	9.57	9.52	9.62		0.67	0.40		8.67	8.59	8.75		0.78	0.54		KW
	V ₂₃	8.80	8.71	8.89		0.66	0.43		8.61	8.52	8.69		0.73	0.64		PO

Dimensions: Workout facilities & price (D₁); Staff (D₂); Layout & facilities (D₃); Ambient conditions & cleanliness (D₄).

Criteria: V₁ (Maintenance of equipment); V₂ (Preservation of equipment); V₃ (Functionality of the equipment); V₄ (Variety of equipment); V₅ (Number of the equipment); V₆ (Value of service); V₇ (Price); V₈ (Politeness of the instructors); V₉ (Accuracy of information provided by instructors); V₁₀ (Performance of instructors when facing problems and complaints); V₁₁ (Competence of instructors); V₁₂ (Number of instructors); V₁₃ (Parking lot); V₁₄ (Location); V₁₅ (Location of equipment); V₁₆ (Ease of use of the equipment); V₁₇ (Waiting time for the beginning of service); V₁₈ (Availability of equipment cleaning products); V₁₉ (Instructors near the equipment to clarify doubts); V₂₀ (Temperature control); V₂₁ (Comfort of facilities); V₂₂ (Cleanliness); V₂₃ (Physical appearance of the fitness center).

"x" indicates that the Tarrant-Smith procedure (TS) is valid for a criterion.

"Decision" indicates which quadrant a criterion has been assigned into, after conducting the TS procedure: Concentrate Here (CH), Keep up the Good Work (KW), Low Priority (LP), Possible Overkill (PO).

$\alpha S = 0.89$), Staff ($\alpha I = 0.77$; $\alpha S = 0.76$), Layout & facilities ($\alpha I = 0.83$; $\alpha S = 0.77$), and Ambient Conditions & Cleanliness ($\alpha I = 0.68$; $\alpha S = 0.80$). Since all alpha-values are above 0.60, the questionnaire is acceptable for exploratory studies^{45,46}. Note that for both importance and satisfaction scores, the reliability of dimension D₂ increases significantly if V₁₃ (Parking lot) and V₁₄ (Location) are removed from the questionnaire. In addition, criterion-total correlations indicate a lower relationship between each of these two criteria and D₂. These results suggest that members prefer shorter travel distances to fitness centers. Furthermore, many members likely walk, cycle, or use motorcycles to reach these locations, minimizing the need for a large, exclusive parking area. It's also possible that public parking options are available nearby.

Results

Analysis of the general responses

Table 1 and **Figure 2** highlight that the most critical criteria concerning the judgements of all participants are primarily related to equipment and instructor attributes. In applying the ISA-TS procedure, the standard error (SE) was calculated for both the importance and the satisfaction scores for each criterion. Adding the SE to the data points on the ISA-TS graph, a 95% confidence interval with the mean value in the centre was created, despite the use of a non-probability sampling method. Notably, using the ISA-TS procedure, the most influential criteria were classified into the 'Concentrate Here (CH)' and 'Keep Up the Good Work (KW)' quadrants. If the traditional IPA approach had been applied, all criteria would have been categorized

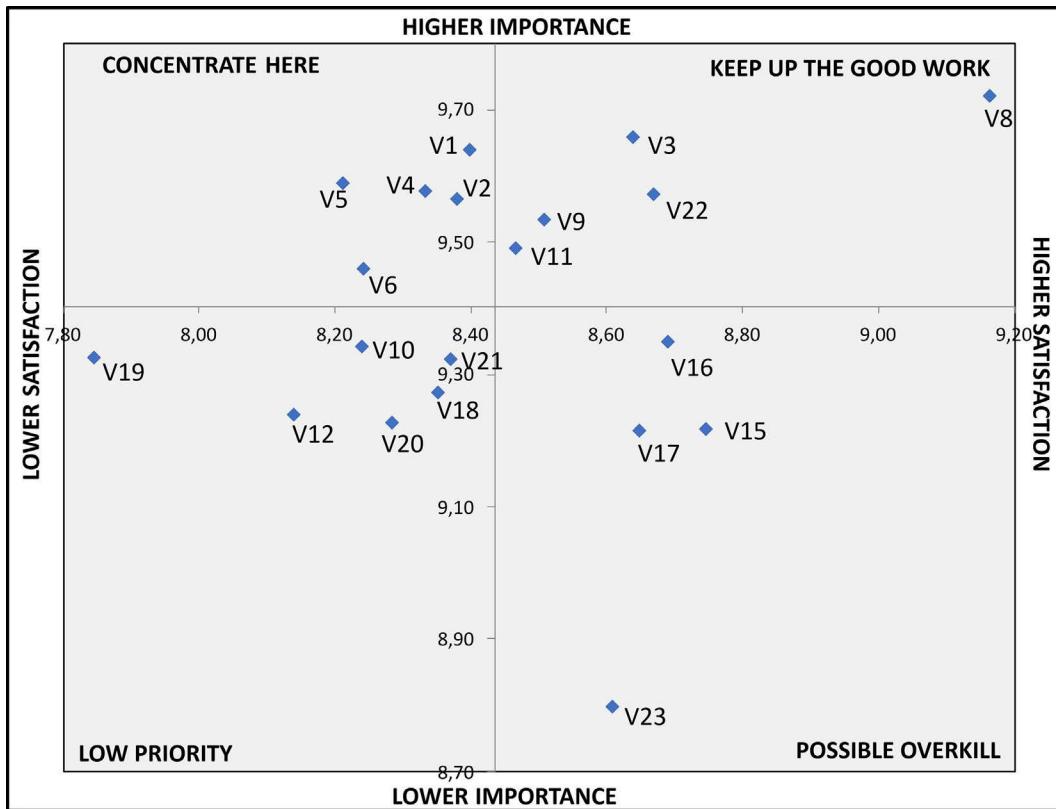


Figure 2 - The ISA-TS graph for general responses.

under the 'KW' quadrant, implying that no management interventions or improvement actions would be required.

The quality of fitness centers was perceived positively, particularly regarding instructor performance. Specifically, participants rated instructors as polite (V₈), accurate in providing information (V₉), and competent (V₁₁). Furthermore, equipment was deemed to function properly (V₃), and facilities were considered clean. It is important to note that the TS procedure indicates that V₉ and V₁₁ are not fully placed within the KW quadrant, suggesting that they should also be considered 'Concentrate Here' criteria. Prior studies^{18,47} have reported high service quality related to instructor performance, and our findings confirm these results. Therefore, our results indicate that the fitness centers should continue their current strategies to maintain service quality in these areas.

Conversely, the service quality of fitness centers requires greater attention in five key areas related to equipment attributes and perceived service value. Specifically, in the 'Concentrate Here (CH)' quadrant, management should prioritize actions to ensure that equipment operates correctly (V₁), is well-maintained (V₂), available in sufficient quantity (V₅), and offers enough variety for diverse physical activities (V₄). Improvements in these areas are crucial for enhancing perceived service value (V₆) among participants. Additionally, the TS procedure

suggests that V₁ and V₂ can also be considered KW criteria.

Our study identifies low-priority criteria related to instructors' problem-solving ability (V₁₀), the number of instructors (V₁₂), availability of equipment cleaning products (V₁₈), proximity of instructors to clarify doubts (V₁₉), temperature control (V₂₀), and facility comfort (V₂₁). These findings are consistent with García-Fernández et al.⁴⁸, who reported that temperature control, typically associated with HVAC system functionality, is among the lowest-priority criteria. However, our results do not support their conclusion that facility comfort is a critical area needing improvement. Notably, the average scores for low-priority (LP) criteria exceeded 9.1, with satisfaction scores surpassing 7.8. Although these criteria are lower priority, they should not be entirely neglected. Furthermore, the TS procedure indicates that facility comfort (V₂₁) and instructors' proximity to equipment (V₁₉) may not be fully assigned to the low-priority quadrant and should also be considered CH criteria to some extent.

The least critical criteria fall within the 'Possible Overkill (PO)' quadrant and pertain to equipment location (V₁₅), ease of use (V₁₆), waiting time for service initiation (V₁₇), and the physical appearance of the fitness center (V₂₃). These criteria require minimal managerial attention, as excessive effort appears to be directed toward areas of

lesser importance. Our findings corroborate the results of recent studies^{48,49} regarding building appearance and decoration. Additionally, the TS procedure indicates that V_{16} may also be interpreted as a KW criterion.

Analysis of the male and female responses

Figure 3a demonstrates that female participants consistently rate the importance of all criteria higher than male participants. In contrast, Figure 3b shows that male participants report greater satisfaction than female participants for only five criteria: equipment maintenance (V_1), number of instructors (V_{12}), temperature control (V_{20}), and cleanliness (V_{22}). These findings align with previous studies^{29,48,50}, which indicate that female users generally hold more positive perceptions. However, higher dissatisfaction levels among women were recently reported²⁹.

The U test results, presented in the last column of Table 2, indicate that, at a significance level of $\alpha = 0.05$, male and female users show no statistically significant differences in their importance ratings for only a few service criteria: equipment variety (V_4 : $U = 15,301.00$; $p = 0.067$), service value (V_6 : $U = 15,499.00$; $p = 0.126$), price (V_7 : $U = 15,701.00$; $p = 0.241$), and cleanliness (V_{22} : $U = 15,254.50$; $p = 0.053$). In contrast, women attribute significantly more importance to all other criteria compared to men. Specifically, these findings align with Afthinos et al.²⁷, who suggest that women place greater emphasis on instructor-related factors such as courtesy, professional competence, and clear communication.

Conversely, the analysis of statistical differences in satisfaction between male and female users of fitness centers requires careful attention. Table 2 indicates that there

are no statistically significant differences ($\alpha = 0.05$) between male and female users regarding satisfaction with equipment (maintenance, preservation, functionality, variety, and quantity), the number of instructors, temperature control, and cleanliness. However, the data reveal that women are statistically more satisfied than men ($\alpha = 0.05$) with the following variables: V_7 ($U = 14,349.000$, $p = 0.018$), V_8 ($U = 14,227.000$, $p = 0.004$), V_9 ($U = 13,918.000$, $p = 0.004$), V_{10} ($U = 14,093.000$, $p = 0.009$), V_{11} ($U = 13,789.000$, $p = 0.003$), V_{15} ($U = 14,213.500$, $p = 0.010$), V_{17} ($U = 14,174.000$, $p = 0.009$), and V_{19} ($U = 13,898.000$, $p = 0.005$). These findings suggest that men exhibit statistically lower satisfaction compared to women regarding aspects such as pricing, instructor politeness, information provided by instructors, instructors' ability to handle problems and complaints, instructor competence, instructor availability near equipment to assist with queries, equipment placement, and waiting time before starting exercises.

Table 2 also summarizes the suggested ISA (Importance-Satisfaction Analysis) decisions following the application of the Tarrant-Smith procedure shown in Figure 4. Specifically, this table presents decisions that fitness center managers can adopt in three scenarios: (i) when only female perceptions are considered (Figure 4a), (ii) when only male perceptions are considered (Figure 4b), and (iii) when perceptions of all participants are considered (Figure 2). The analysis reveals several key findings.

In some cases, the three scenarios converge on the same suggested decision. For criteria V_2 , V_5 , V_8 , V_{15} , V_{16} , and V_{22} , the ISA-TS gender analysis does not influence the management decision. This implies that even without conducting a gender-specific ISA-TS analysis, the correct general decisions would be made for these criteria. For

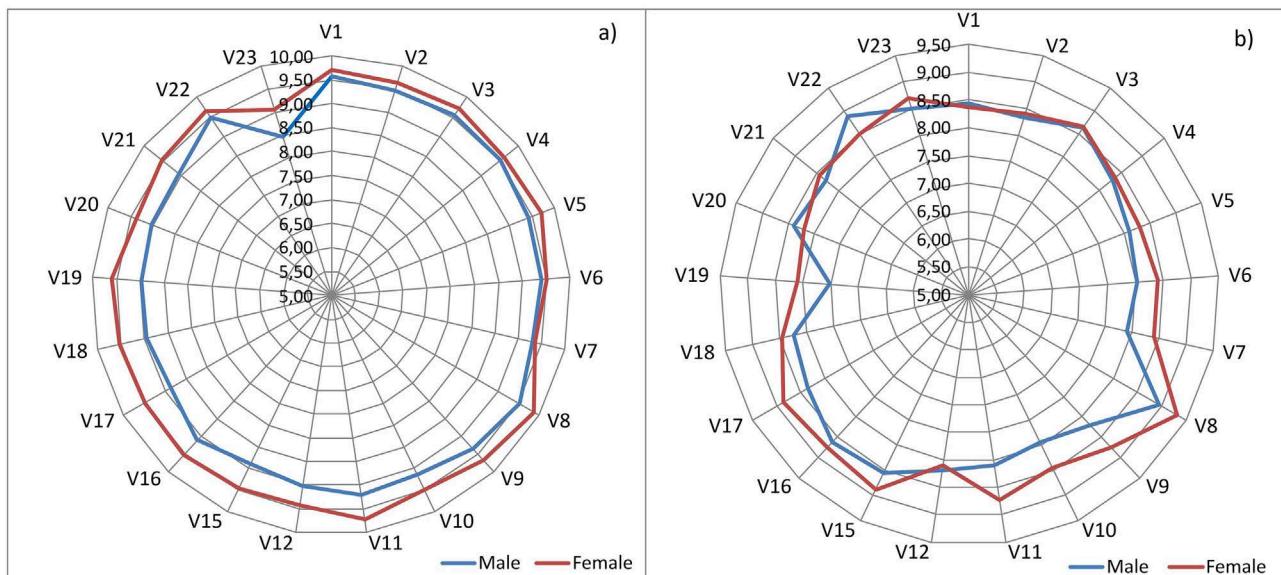


Figure 3 - Average importance of the criteria (a) and Average satisfaction (b) regarding gender.

Table 2 - The ISA-TS and U-test results for gender responses.

Cr.	Female						Male						General		U						
	Importance			Satisfaction			Importance			Satisfaction					(p-value)						
	\bar{I}_j	$(\bar{I}_j)_i$	$(\bar{I}_j)_s$	TS	\bar{S}_j	$(\bar{S}_j)_i$	$(\bar{S}_j)_s$	TS	\bar{I}_j	$(\bar{I}_j)_i$	$(\bar{I}_j)_s$	TS	\bar{S}_j	$(\bar{S}_j)_i$	$(\bar{S}_j)_s$	TS	Decision	Decision	I	S	
V ₁	9.70	9.63	9.77		8.36	8.23	8.50		CH	9.56	9.48	9.64		8.44	8.31	8.58		KW	CH-KW	0.019	0.880
V ₂	9.64	9.57	9.71		8.41	8.28	8.54	x	CH-KW	9.47	9.39	9.55		8.34	8.19	8.49	x	CH-KW	CH-KW	0.035	0.902
V ₃	9.73	9.66	9.80		8.64	8.53	8.76	x	CH-KW	9.57	9.49	9.64		8.63	8.51	8.76		KW	KW	0.006	0.778
V ₄	9.63	9.56	9.70	x	8.36	8.24	8.49		CH-LP	9.51	9.43	9.59		8.30	8.15	8.44	x	CH-KW	CH	0.067	0.714
V ₅	9.73	9.68	9.77		8.31	8.18	8.43		CH	9.41	9.31	9.51		8.09	7.95	8.23		CH	CH	0.024	0.134
V ₆	9.51	9.44	9.59	x	8.41	8.30	8.52		CH-LP	9.39	9.30	9.47		8.03	7.87	8.18		CH	CH	0.126	0.091
V ₇	9.36	9.26	9.45		8.40	8.28	8.53		LP	9.30	9.20	9.40	x	7.91	7.75	8.07		CH-LP	CH-LP	0.241	0.018
V ₈	9.88	9.84	9.92		9.33	9.23	9.43		KW	9.52	9.44	9.61		8.95	8.82	9.08		KW	KW	0.000	0.004
V ₉	9.67	9.61	9.73		8.76	8.64	8.87		KW	9.37	9.26	9.47		8.20	8.04	8.35	x	CH-KW	CH-KW	0.002	0.004
V ₁₀	9.50	9.42	9.58	x	8.47	8.35	8.58	x	CH-LP-PO	9.14	9.03	9.26	x	7.95	7.79	8.11		CH-LP	CH-LP	0.000	0.009
V ₁₁	9.71	9.63	9.78		8.74	8.63	8.86		KW	9.21	9.08	9.35	x	8.11	7.95	8.28		CH-LP	CH-KW	0.000	0.003
V ₁₂	9.42	9.32	9.51		8.10	7.95	8.24		LP	9.02	8.88	9.15		8.19	8.04	8.35	x	LP-PO	LP	0.004	0.838
V ₁₅	9.47	9.39	9.54		8.89	8.79	8.99		PO	8.90	8.76	9.04		8.56	8.45	8.68		PO	PO	0.001	0.010
V ₁₆	9.53	9.46	9.60	x	8.75	8.65	8.86		KW-PO	9.11	8.99	9.24	x	8.61	8.49	8.73		KW-PO	KW-PO	0.008	0.274
V ₁₇	9.49	9.42	9.56	x	8.87	8.76	8.98		KW-PO	8.87	8.73	9.00		8.36	8.21	8.51	x	LP-PO	PO	0.000	0.009
V ₁₈	9.52	9.43	9.62	x	8.45	8.31	8.58	x	CH-LP-PO	8.95	8.82	9.09		8.23	8.09	8.37	x	LP-PO	LP-PO	0.000	0.094
V ₁₉	9.60	9.52	9.67	x	8.11	7.95	8.26		CH-LP	8.98	8.85	9.11		7.52	7.34	7.70		LP	CH-LP	0.000	0.005
V ₂₀	9.38	9.29	9.48		8.20	8.06	8.33		LP	9.03	8.91	9.16		8.39	8.26	8.53	x	LP-PO	LP	0.005	0.482
V ₂₁	9.52	9.44	9.59	x	8.44	8.32	8.55	x	CH-LP-PO	9.08	8.97	9.18		8.29	8.16	8.42	x	LP-PO	CH-LP-PO	0.000	0.262
V ₂₂	9.64	9.58	9.70		8.50	8.38	8.62	x	CH-KW	9.48	9.40	9.56		8.89	8.78	8.99		KW	KW	0.053	0.055
V ₂₃	9.06	8.97	9.16		8.70	8.59	8.81		PO	8.46	8.31	8.61		8.49	8.36	8.62		PO	PO	0.002	0.147
$\bar{I} = 9.56$						$\bar{S} = 8.53$						$\bar{I} = 9.21$						$\bar{S} = 8.31$			

Criteria: V₁ (Maintenance of equipment); V₂ (Preservation of equipment); V₃ (Functionality of the equipment); V₄ (Variety of equipment); V₅ (Number of the equipment); V₆ (Value of service); V₇ (Price); V₈ (Politeness of the instructors); V₉ (Accuracy of information provided by instructors); V₁₀ (Performance of instructors when facing problems and complaints); V₁₁ (Competence of instructors); V₁₂ (Number of instructors); V₁₃ (Parking lot); V₁₄ (Location); V₁₅ (Location of equipment); V₁₆ (Ease of use of the equipment); V₁₇ (Waiting time for the beginning of service); V₁₈ (Availability of equipment cleaning products); V₁₉ (Instructors near the equipment to clarify doubts); V₂₀ (Temperature control); V₂₁ (Comfort of facilities); V₂₂ (Cleanliness); V₂₃ (Physical appearance of the fitness center).

“x” indicates that the Tarrant-Smith procedure (TS) is valid for a criterion.

“Decision” indicates which quadrant a criterion has been assigned into, after conducting the TS procedure: Concentrate Here (CH), Keep up the Good Work (KW), Low Priority (LP), Possible Overkill (PO).

other criteria (e.g., V₁, V₇, V₉, V₁₁, V₁₉, and V₂₁), the general decision aligns with both female and male decisions, but it does not clearly distinguish the decision based on gender. Conversely, for the remaining criteria, the general decisions fail to account for gender differences regarding service quality.

In other cases, the ISA-TS results for females and males lead to different management decisions. This divergence complements the findings of the statistical U-tests, suggesting that distinct management actions should be implemented to specifically address the needs of female and male users for most of the evaluated criteria.

Discussion

The findings of this study provide relevant insights into how service quality criteria are perceived in fitness centers, particularly when assessed through the ISA-TS procedure. Given that this procedure has been applied to both female and male judgments - analyzed collectively and separately by gender - it is appropriate to undertake a distinct discussion for each context.

In a collective perspective, our results indicate that the most critical criteria influencing participants' evaluations were related to equipment and instructor attributes.

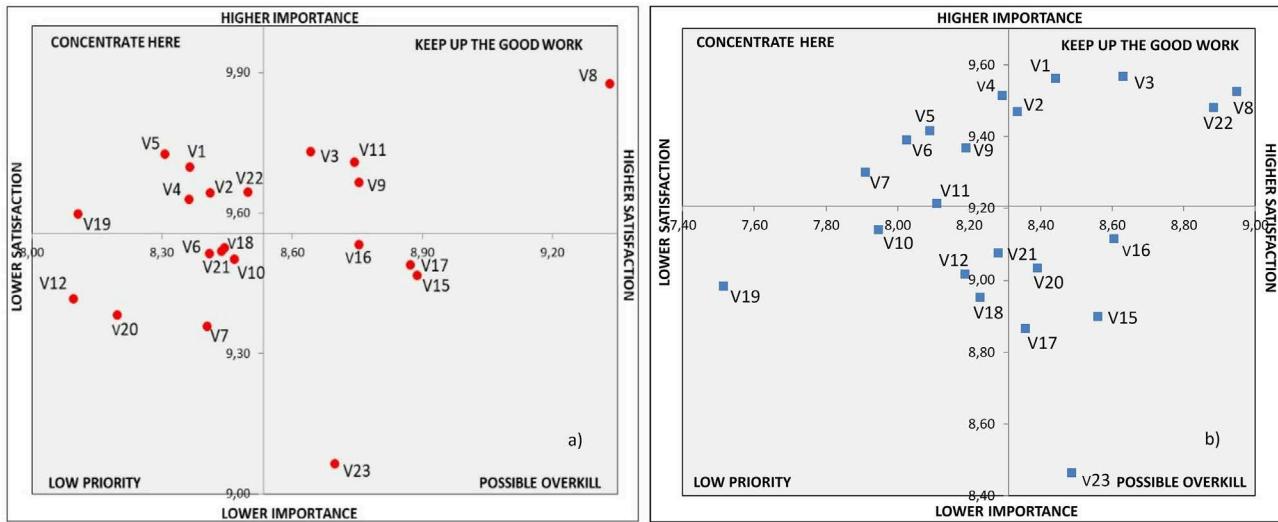


Figure 4 - The ISA graph for female (a) and male (b) participants.

These findings are consistent with previous literature^{23,27,47,51,52} and underscore the important role that both tangible resources and human interaction play in shaping service quality perceptions. Participants positively evaluated instructor-related attributes. Especially, instructors must be polite, provide accurate information, and be technically competent. These findings corroborate earlier research^{18,24,47}, reinforcing the importance of instructor performance in maintaining customer satisfaction. Conversely, several equipment-related criteria emerged as areas of concern. Specifically, the equipment must be fully operational, function reliably, and be available in adequate quantities to accommodate diverse physical activities. These criteria are critical for enhancing perceived service value, a finding that aligns with García-Fernández⁴⁸. The findings emphasize the critical importance of sustained investment in equipment quality, as well as the implementation of a proactive and systematic approach to the management of physical infrastructure.

On the other hand, our findings highlight notable gender-based differences in both the perceived importance and satisfaction levels regarding various service criteria in fitness centers. Consistent with previous research^{29,48,50}, female users rated the importance of nearly all service criteria significantly higher than their male counterparts. This reinforces the notion that women tend to have more discerning or critical service expectations, particularly in relation to interpersonal and environmental criteria. However, this evidence also underscores a paradox: despite assigning greater importance to most criteria, female users did not report higher satisfaction across the board. On the contrary, male users exhibited greater satisfaction in a limited set of domains, including equipment maintenance, the number of instructors, temperature control, and cleanliness.

The absence of statistically significant gender differences regarding the importance ratings for criteria such as equipment variety, service value, price, and cleanliness suggests some common ground in user expectations. Yet, female users consistently prioritized most other service aspects more highly, especially those linked to instructor behavior and interpersonal engagement. These results align with the findings of Afthinos et al.²⁷, who observed that female users tend to place greater emphasis on service quality dimensions related to instructor courtesy, professional competence, and the clarity of communication.

Interestingly, satisfaction data revealed a more nuanced pattern. While male and female users reported comparable satisfaction in technical and environmental domains - such as equipment functionality, temperature control, and cleanliness - female users expressed significantly higher satisfaction than male users in several instructor-related dimensions. These include instructor politeness, communication clarity, problem-solving ability, and presence on the gym floor, as well as operational aspects like waiting time and equipment organization. These findings suggest that while female users are generally more demanding in their expectations, fitness centers may currently be meeting or exceeding these expectations in key interpersonal and organizational areas.

Taken together, the results indicate that gender plays a complex role in shaping both expectations and experiences within the fitness service environment. The higher satisfaction levels reported by female users in instructor-related domains may reflect targeted improvements in service delivery or evolving gender-specific service standards. Nevertheless, the discrepancies between importance and satisfaction scores also point to the need for more tailored service strategies that consider the dis-

tinct preferences and satisfaction drivers of male and female users.

Conclusion

Over the past 40 years, assessing service quality in fitness centers has attracted the interest of researchers and practitioners from various fields. However, there has been little focus on examining gender differences in service quality evaluations within these centers. This paper aims to address this gap by conducting an exploratory study to identify the key criteria influencing the quality of fitness centers and to explore whether there are differences in user perceptions of these services based on gender.

Theoretical contributions

Numerous studies^{53,54,55} have explored the factors (or dimensions) influencing service quality and user satisfaction in the fitness industry, but limited attention has been given to exploring the most relevant criteria. This study aims to address this gap, emphasizing the importance of identifying the key criteria that shape service quality in fitness centers from the users' perspectives. Additionally, we highlight the necessity of conducting gender-specific analyses when evaluating service quality.

Our findings suggest that integrating Importance-Satisfaction Analysis (ISA) with the Tarrant & Smith (TS) procedure offers a more effective approach than traditional ISA for identifying critical criteria that should be prioritized for improvement actions. This integration has two major advantages.

First, the ISA-TS procedure prevents all criteria from being clustered within a single quadrant, which would indicate that only one management strategy is necessary. For instance, when all criteria are positioned within the 'Keep Up the Good Work (KW)' quadrant, as observed in the study by Yıldız and Özdemir⁵³, it suggests the absence of areas requiring improvement. While this may appear favorable, such a result may lack analytical depth and offer limited contribution to the ongoing pursuit of quality enhancement.

Second, the ISA-TS procedure mitigates the risk of erroneous managerial decisions that might arise when a criterion is not statistically and definitively assigned to one of the four quadrants.

In this study, we applied this combined approach to assess service quality in fitness centers, examining the perceptions of male and female users separately, as well as collectively. Several significant divergences between the perceptions of the two genders were observed.

Managerial implications

It is notorious that customer knowledge plays a crucial role in ensuring customer satisfaction^{56,57}, which is essential for retaining fitness center users and attracting

new ones. Our study offers important insights for managers and practitioners within the context of gender analysis. First, our study demonstrates that fitness center usage declines significantly after the age of 50 for both genders. Additionally, our findings reveal that evening hours are the most preferred time for fitness center attendance overall, with men more frequently utilizing the facilities in the morning and women showing a preference for afternoon visits.

The frequency of attendance at fitness centers is substantial, with 79.5% of female users and 86.9% of male participants attending four or more times per week. This trend may be partially explained by the demanding schedules many women face to, including managing full-time employment, childcare, and household responsibilities.

Despite this high frequency, only 14.2% of male participants and 23.7% of female participants have maintained their membership at the same fitness center for more than four years. While weekly attendance remains high, the elevated turnover rate suggests a low level of long-term user loyalty.

These findings indicate the need for further investigation into the factors that contribute to users discontinuing their membership. Potential reasons may include injury, financial constraints, time limitations, or other personal factors that do not necessarily reflect a transition to a different fitness center.

It is recommended that fitness center management implement customer relationship management systems to monitor user attendance patterns. Proactively contacting users when attendance begins to decline or when they experience prolonged absences could demonstrate concern for member well-being and help identify areas where service quality may be falling short of user expectations.

Our results suggest that females generally hold more positive perceptions of service quality than males, which aligns with previous research. However, our analysis shows no significant differences between women and men regarding perceptions of equipment-related criteria, such as the number of instructors, environmental temperature, and cleanliness. In contrast, males expressed lower satisfaction than females with criteria related to instructors, pricing, equipment location, and waiting times for activities. These findings highlight the need for targeted management interventions to address male users' concerns in these areas.

The results of the ISA-TS graphs are presented in Figure 4, illustrating the differences in perceptions between female and male users concerning the assignment of each criterion across the four quadrants. These findings should be compared with the data in Table 2 to validate the proposed management decisions derived from the implementation of the TS procedure.

Finally, this study is expected to enhance the management of service quality in fitness centers. By system-

atically observing and monitoring user behavior and associated criteria, fitness center managers can gain valuable insights. These insights are essential for attracting new customers and retaining existing ones in fitness centers, thereby contributing to the overall enhancement of public health and well-being.

Limitations and future research perspective

The study was carried out in fitness centers within a medium-sized Brazilian municipality, with the sample predominantly comprising users of small to medium-sized facilities. These characteristics may have influenced participants' importance and satisfaction ratings on certain criteria, such as pricing, equipment quality, and environmental conditions. Consequently, these factors may have impacted the classification of criteria into the four management action quadrants. For example, small and medium-sized fitness centers typically lack the most modern equipment and ideal environmental conditions. However, they may compensate for these limitations by offering more competitive pricing.

Our study aims to contribute to the management of service quality across various types of fitness centers (e.g., low-cost, full-service and boutique). However, caution should be exercised when comparing our findings with those from studies conducted in other types of fitness centers or in different countries. This is due to potential variations in cultural factors and the socio-demographic characteristics of customers, which may differ significantly between regions.

Future studies could focus on applying the proposed criteria and methods to address two main objectives: first, to identify the criteria that most significantly influence the quality of fitness centers in different countries and regions; and second, to expand data collection to obtain larger, more robust samples, enabling a more comprehensive analysis of fitness center quality across different age groups and types of fitness centers.

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