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Article

Perceived expectations and experience of recreation service quality delivery from the recreation hub users in Gauteng Province, South Africa

S. S. Khanyile*, M. E. M. Young, M. J. Malema, L. Leach

Department of Sports, Recreation & Exercise Sciences, Faculty of Community Health Sciences, University of the Western Cape, P. Bag X17, Bellville 7535, South Africa
*** Corresponding author:** S. S. Khanyile, khanyilesammy@gmail.com

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Abstract: Public recreation hubs play an important role in enhancing physical activities, social contacts, and the health status of a community. The quality of the experience in such a setting influences user satisfaction and dedication; however, there are limited studies that can adapt well-advanced conceptual frameworks to capture unique characteristics of the public recreation feature. This study investigates user expectations and perceptions of service quality within public recreation hubs in Gauteng Province, South Africa. Data collection was obtained through a cross-section of 385 respondents using a SERVQUAL instrument from 22 recreational hubs. Various statistical analyses were performed, of which the EFA produced a nine-factor solution and not the customary five SERVQUAL dimensions. Important findings include the emergence of an intersection of the constructs of empathy and assurance, thereby suggesting that the dimensions are perceived as connected in the context of relational services. In addition, program quality and community engagement came out as two other important dimensions, representing the expectation for pluralism in provision, or inclusiveness and participation. Demographic differences were significant, gender differences existed in the perception of tangibles and reliability. It provides useful recommendations for managers of recreational hubs and policymakers. It could improve tangible factors with standard maintenance activities, improved infrastructure, and coordinated operational routines that improve its reliability. Targeted training among the staff for empathy and reassurance, and programming targeted to meet demographic needs, can be helpful in serving the various needs. Community building strategies, such as participatory planning and outreach programs, help make the people who feel included in them and loyal to facilities stay. It will not only help in offering better service delivery but also ensure that facilities within such public recreation hubs last long. This work contributes to service quality theory because it applies the SERVQUAL framework in a community-based recreational environment and shows its practical benefit in service delivery improvement of public services. Further work should adopt longitudinal methods and multi-regional analyses in the development and refinement of such findings to enhance generalisability across settings. Results have important implications for the development of user-focused, sustainable public recreation services compatible with changing community needs.

Keywords: recreation programmes; service quality; perception; delivery recreation hubs

1. Introduction

Recreation hubs are pivotal in promoting physical activity, fostering social interactions, and enhancing overall well-being (Larissa and Davies, 2016; Peter et al., 2022). Despite their importance, the growing popularity of recreation hubs introduces a critical challenge ensuring the consistent delivery of high-quality services to meet diverse user expectations and achieve higher satisfaction levels (Adil et al., 2014; Akil

and Ungan, 2022). While the provision of recreation programs is widely acknowledged as essential for human development and societal engagement (Nichlos, 2007), studies often focus on generalized frameworks of service quality without fully addressing the unique demands of public recreation hubs in different cultural and regional contexts.

In Gauteng Province, South Africa, public recreation hubs face unique challenges in delivering high-quality services (Chakwizira et al., 2018). The region's socio-economic diversity, rapid urbanization, and resource constraints require tailored approaches to service delivery (Katumba and Everatt, 2021). Users of these hubs come from various demographic backgrounds, each with distinct needs and expectations, making it difficult to apply generalized service quality frameworks effectively (Komossa et al., 2019; Lee et al., 2019; Powers et al., 2020). Despite their importance, studies on service quality in recreation hubs in Gauteng are limited, leaving a critical gap in understanding how to align service offerings with user priorities in this context (Bikam and Chakwizira, 2021).

Globally, service quality in public spaces is increasingly recognized as a determinant of user satisfaction and loyalty (Borda Luna, 2021). Models such as SERVQUAL have been widely applied in various industries to measure dimensions of service quality, including tangibles, reliability, responsiveness, assurance, and empathy (AlOmari, 2020; Mathong et al., 2020; Parasuraman et al., 1988; Salleh et al., 2019). However, these models have seen limited adaptation to public recreation hubs, particularly in rapidly urbanizing regions like South Africa (Luke and Heyns, 2020; Menezes et al., 2020). Studies specific to such contexts are scarce, leaving a gap in understanding how service quality perceptions vary based on cultural, socio-economic, and demographic factors (Liu et al., 2022). Additionally, public recreation hubs face unique challenges, including resource constraints and diverse user needs, which are often overlooked in global service quality frameworks (Li et al., 2009; Yeshitela, 2020).

This study bridges this gap by investigating users' expectations and experiences regarding service quality at public recreation hubs in Gauteng Province, South Africa. By contextualizing the SERVQUAL framework to a community-based recreational setting, this research highlights the interplay of global service quality dimensions with localized socio-cultural realities.

Through this focus, the study not only contributes to understanding the determinants of service quality in the Gauteng recreation sector but also informs global discussions on how public service delivery models can adapt to diverse community needs. By aligning theoretical insights with practical implications, this research offers a valuable framework for policymakers and managers striving to enhance the sustainability and user satisfaction of public recreational facilities.

2. Literature review

2.1. Advancements in the SERVQUAL framework

The SERVQUAL model, originally developed by Parasuraman et al. (1988), remains a cornerstone for measuring service quality across various industries (Amenta et al., 2020; Chatzidimou et al., 2023; Kumar and Hundal, 2019; Kansara, 2019;

Talavera, 2020). Recent adaptations have emphasized integrating additional dimensions and methodologies to enhance its applicability in specific contexts. For example, Menezes et al. (2020) proposed an adaptation of the SERVQUAL model for event evaluation, incorporating environmental sustainability as an additional dimension. This innovation aligns with growing concerns over social and ecological responsibility in service delivery. The study underscores the potential for customized SERVQUAL applications to address unique service domains, such as public recreation hubs, where sustainability and community engagement are critical considerations (Menezes et al., 2020). Similarly, Tumsekcali et al. (2021) introduced a novel "Pandemic SERVQUAL 4.0" model tailored for evaluating public transport systems during the COVID-19 pandemic. This adaptation integrates criteria related to Industry 4.0 and pandemic-era challenges, emphasizing flexibility and resilience. Such enhancements demonstrate how SERVQUAL can be adjusted to reflect evolving societal and technological demands (Tumsekcali et al., 2021).

Empirical studies applying SERVQUAL in public recreation settings reveal insights into user expectations and service quality gaps. For instance, Hughes and Paveglio (2019) investigated off-road vehicle recreation in public lands, emphasizing the importance of balancing environmental preservation with user satisfaction. Their findings highlight the significance of responsiveness and reliability in managing public recreation services to meet diverse user needs (Hughes and Paveglio, 2019). In urban contexts, Afroj et al. (2021) applied SERVQUAL to assess municipal services in Dhaka, Bangladesh. The study revealed moderate satisfaction levels, with tangibles and reliability identified as critical dimensions. The research emphasized the need for participatory management and resource optimization, which are directly relevant to the challenges faced by Gauteng's recreation hubs (Afroj et al., 2021).

The relationship between service quality and user satisfaction has been extensively documented in recent years. Altuntas and Kansu (2019) demonstrated how an integrated approach combining SERVQUAL, Quality Function Deployment (QFD), and Failure Modes and Effects Analysis (FMEA) can effectively identify service deficiencies and improve user satisfaction. Their case study in a Turkish hospital underscores the applicability of similar integrated methodologies to public recreation hubs (Altuntas and Kansu, 2019). In a global context, Lee and Seong (2020) applied SERVQUAL in higher education to identify gaps in service delivery and develop actionable improvements. The findings revealed that responsiveness and empathy significantly enhance user loyalty, insights that resonate with the expectations of recreation hub users in Gauteng (Lee and Seong, 2020).

2.2. Gap model framework

The Gap Model of Service Quality, envisioned by Parasuraman, Zeithaml, and Berry back in 1985, is still basic in analysing the gaps which exist between customer expectations and their perceptions about service delivery. According to Khan (2021), this model defined five critical gaps which may distinctly lower the service quality: knowledge gap, policy gap, delivery gap, communication gap, and perception gap. Basically, the model distinguishes between expected service-defined as what consumers expect based on individual needs, past experiences, and word-of-mouth

advertising-and perceived service, which is their actual experience. Five significant gaps are identified. Gap 1, the knowledge gap, reflects a discrepancy between customer expectations and management's perception of those expectations. Gap 2, the policy gap, occurs when the management fails to translate such expectations into successful specifications for service quality. Gap 3: Delivery gap-when service is not delivered as per laid standards. Gap 4: Communication gap-what is delivered is not communicated from external communication. Gap 5: Perception gap-the difference between what was perceived and what was expected is the direct influencer of customer satisfaction. The model also illustrates interlinked gaps in marketing, employee performance, and internal processes. The following comprehensive framework is necessary in helping organizations such as public recreational facilities systematically identify and correct service quality issues in order to ensure that the customers' expectations always match the delivery of the services (Parasuraman et al., 1985).

Other recent works have also updated and refined the Gap Model, incorporating into its contemporary service contexts and thereby making it relevant to contemporary dynamic and customer-driven industries. For example, Khan et al. (2021) employed the Gap Model to investigate service quality within the healthcare sector, demonstrating that discrepancies in communication and delivery substantially influence patient satisfaction. The findings cast a glimpse into the importance of the model to varied fields besides being able to identify certain domains on which potential services can be improved. Such gaps, handled systematically, enable the organizations to work toward better customer experiences that contribute to loyalty in competitive settings. Recent studies also indicate the need to adapt the Gap Model to the context of any given service, with continuously changing customer expectations and the development of technology. Ramírez et al. (2022) have applied the model in the context of digital service platforms and affirm that there are several gaps, including what is called the technology-performance gap, with more than five dimensions. The modification thus made reflects the rising complexity in assessing service quality in the digital times, where speed and personalization are everything. In a similar vein, Zhang et al. (2021) researched the model within public recreation services. This also brought forth some of the main difficulties that have to be faced in the quest to satisfy diversified expectations: knowledge and communication gaps. Such insights bring out the continuing relevance and elasticity of the Gap Model and justify its continued adoption as a diagnostic and strategic tool in service quality improvement for traditional and emerging sectors.

2.3. The SERVQUAL model

The SERVQUAL model, developed by Parasuraman et al. (1988), is a conceptual model that attempts to define and measure service quality across various sectors. This conceptual model rests on five underlying dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The tangible aspect involves physical evidence, equipment, and the appearance of the personnel, and collectively they provide a visible cue to the customer regarding service quality. Reliability denotes the ability of the service provider to perform the promised services dependably and

accurately. Responsiveness concerns the propensity and preparedness of staff to render timely assistance to users. Assurance involves knowledge, courtesy, and the capability of the staff to inspire trust and confidence among the users. Finally, empathy refers to the level of personalized attention and care towards the users.

The choice of the SERVQUAL model is based on the strength and comprehensive validations of this model across many service sectors. Its structured approach helps in systematically identifying gaps in the quality of the service provided and has proven to be particularly helpful in identifying users' expectations and perceptions. Despite its widespread use, the SERVQUAL framework has received limited adaptation for public recreation hubs, especially in regions like South Africa, where unique socio-economic and cultural conditions influence service expectations (Govender and Msiza, 2021; Hassan and Alam, 2022; Mhlongo and Thwala, 2020). The relevance of SERVQUAL in this context is based on its ability to determine the tangible and intangible dimensions of service provision, thus allowing a comprehensive view of operational effectiveness and customer-oriented care (Alzaydi et al. 2018; Ladhari, 2009; Seth et al., 2005).

Nevertheless, the very need to adjust SERVQUAL with a view to capturing issues peculiar to the sector, such as program diversity and community involvement, it would be justified to broaden its dimensions to represent the context of public recreation hubs.

3. Methods

3.1. Research design

The present study was undertaken as part of a quantitative, cross-sectional design aimed at establishing users' service quality expectations from recreation hubs. The sample included 385 respondents selected from 22 formally established recreation hubs spread across the five regions: Ekurhuleni, Johannesburg, Sedibeng, Tshwane, and the West Rand, thus drawing respondents from most parts of Gauteng Province.

3.2. Population and sampling method

The study targeted a diverse group of recreation hub users, both males and females aged 18 years and older, residing in the five regions of Gauteng Province: Ekurhuleni, Johannesburg, Sedibeng, Tshwane, and West Rand. It should be noted that the performance monitoring report of the Department of Sport, Arts, Culture and Recreation (DSACR) reported around 90,073 active respondents (52,626 males and 42,447 females) in organized recreation events for the fiscal year of 2021/2022 (DSACR, 2022).

In this regard, the Slovin formula was used to estimate sample size, using a 5% margin of error for a population estimated at 162,905 recreation hub users. While 399 was the required sample size, the actual number for which data was captured was 385. The reduction in the sample size was due to some questionnaires being incomplete, containing missing data, or being irretrievable; however, the final sample remained statistically robust and aligned with the calculated target. In this study, therefore, stratified random sampling was used to enhance representativeness, whereby strata are

geographic regions-Ekurhuleni, Johannesburg, Sedibeng, Tshwane, and West Rand-and recreation hubs in those regions, in total, 22. In this, appropriate proportional allocation was considered in order to reflect every region's sample size according to its population share. Every hub employed a systematic random sampling methodology across a large number of intercept locations, including facility entry points, where every nth visitor was selected. Methods employed to reduce any bias included randomization strategies, the manipulation of intercept locations in order to achieve user capture from different user types, and pre-tests to check for operation according to systematic sampling procedures.

The SERVQUAL framework has been adapted according to the unique characteristics of the recreation hubs in Gauteng. These first items were generated in the subject of recreation; for example, the item "The facility is clean and appealing" was changed to "The recreational equipment is modern and well-maintained," which reflects the physical nature of recreational services. More items were added to gauge the quality of the programs, including "The recreation programs are scheduled at convenient times," as well as items on community engagement, for example: "The staff consider user suggestions to improve programs seriously." This was in line with support by previous studies on the context-specific applications of the SERVQUAL approach for example, Menezes et al. (2020); Tumsekcali et al. (2021) that has called for contextual relevance.

The pilot testing conducted with a cohort of 30 participants verified the clarity and suitability of the modifications made, as evidenced by Cronbach's alpha coefficients surpassing 0.8, which signifies robust reliability. Psychometric assessments, particularly exploratory factor analysis, affirmed the necessity of incorporating additional items while maintaining the fundamental SERVQUAL dimensions. This customized methodology guaranteed that the instrument effectively represented the service quality expectations and experiences of users from Gauteng's varied recreation hubs, thereby strengthening the methodological rigor of the study.

Slovin's formula was used to calculate the sample size of the respondents based on the sample size (n), margin of error (e = 5%), and population size (N = 57,687).

$$N = \frac{N}{1+Ne^2} = \frac{162{,}905}{1+162{,}905(0.5)^2} = 399.$$

Using this sampling method, along with strict methodological frameworks from the literature (Coleman, 2017; Reining, 2019), provided a solid foundation for investigating the service quality expectations of recreation hub users across Gauteng Province.

3.3. Research instruments and procedures

The primary tool for data collection in this study was a self-administered questionnaire consisting of closed-ended questions (Fink, 2019). The study utilized the SERVQUAL instrument, originally conceptualized by Parasuraman et al. (1985), renowned for its effectiveness in evaluating service quality across various industries. The SERVQUAL instrument has been validated and exhibited strong psychometric properties, including high reliability and validated across diverse service contexts

(Cronin and Taylor, 1992). Specifically, Cronbach's alpha values typically exceeded 0.7, indicating good internal consistency (Nunnally, 1978; Taber, 2018).

For this research, the SERVQUAL instrument was carefully adapted to align with the specific context of recreation hubs in Gauteng Province. The psychometric evaluation of the scales showed excellent internal consistency and construct reliability. The alpha coefficients for each of the five dimensions were found to be 0.80, surpassing the minimum acceptable value of 0.6, which indicates reliability (Bonett and Wright, 2015; Hair et al., 1998; Malmqvist et al., 2019). This result is consistent with studies by Greenwell et al. (2002), Parasuraman et al. (1988), and Yong and Pastore (2004), who also utilized SERVQUAL items to measure service quality. The adaptations involved modifying the language and examples used in the questionnaire to be more relevant to the recreational services offered at these hubs. Additionally, certain items were tailored to reflect the unique aspects of recreation services, such as the quality of recreational equipment and the scheduling of programs. These changes ensured that the instrument accurately captured respondents' expectations of service quality in the context of Gauteng's recreation hubs.

The questionnaire was structured into three distinct sections to systematically capture a comprehensive profile of the respondents' and their expectations:

Section A: Covers the demographic profile of the respondents, gathering data on variables such as age, gender, race, language, education, and geographical region to understand the background of the respondents.

Section B: Focused on service quality expectations, deploying 25 items to gauge the respondents' perception of service quality before their experience at the hubs.

Responses were quantified using a 4-point Likert scale, with options ranging from 'strongly disagree' to 'strongly agree.' The fact that a 4-point Likert scale has been used in this study is intentionally and methodically contextual. The scale was used in a way to rule out a middle or neutral response (Dolnicar, 2021). Thus, this may finally force the respondents to take a stand on each of the statements. Another reason is the need for simplicity and ease of understanding, given the diverse demographics and educational backgrounds that characterize users of recreation hubs in Gauteng (Winston, 2021). A 4-point scale reduces cognitive burden and limits possible misclassifications compared to larger scales, like 5 or 7-point scales, due to better quality of response.

Scale items were categorized into five key dimensions of SERVQUAL: assurance, empathy, reliability, responsiveness, and tangibles. The tangible part involves the appearance of physical facilities, equipment, personnel, and communication materials. Reliability is the ability of the organization to perform the promised service dependably and accurately. Responsiveness is the willingness of the organization to help customers and to ensure that the services are provided promptly. Assurance is the word that refers to the employees' competence, courtesy, and their ability to inspire trust and confidence in the customers. Ultimately, empathy underscores the organization's dedication to providing tailored and thoughtful attention to every customer, thereby guaranteeing that they perceive themselves as valued and comprehended (Parasuraman et al., 1988). The researcher chose this scale to force respondents to express a clear opinion on each statement, thereby preventing neutral responses and improving the accuracy of the data.

3.4. Data analysis

The analysis of data commenced with the capture of the responses in Microsoft Excel for preliminary precoding and later exporting them, for further processing, into IBM SPSS Statistics software. These descriptive statistics summarized demographic and behavioral characteristics for the participants and thus allowed the development of a unique profile of users of the recreation hub. Generally, descriptive statistics are meant to summarize both categorical and continuous variables with the aim of allowing a characterization of the distribution and central tendencies present in the dataset (Field, 2018; Frey, 2022; Sullivan, 2021; Tabachnick and Fidell, 2007). For the current study, the demographic factors of the respondents, including age, gender, and participation frequency, were recorded through means, standard deviations, and frequency counts, thus setting the ground for subsequent inferential analysis (Awang, 2015).

Inferential analysis, in turn, resorted to other statistical tests in order to find deeper links in the data. An EFA was thus conducted to identify the dimensions of the SERVQUAL model by Hair et al. (2019); Parasuraman et al. (1988). The two prerequisites necessary for factor extraction are that the KMO statistic should be above 0.60 and also that Bartlett's Test of Sphericity should show a statistically significant outcome of less than 0.05 as considered by Byrne (2010); Gronroos (2007). In EFA, rotations were performed by Varimax while above 0.4 factor loadings were considered long enough and representative of significance and belonging to their particular service quality dimension accordingly (Field, 2018; Tabachnick and Fidell, 2007).

Cross-tabulation analysis was conducted to identify links between demographic characteristics (gender and age) and service quality dimensions. Chi-square tests indicated statistically significant differences at $p < 0.05$, following norms for such analyses within the service literature (Chen et al., 2009; Wakefield and Blodgett, 1999). For mean differences across these categories of demographic and behavioural characteristics, Analysis of Variance (ANOVA) was employed; significant F-statistics ($p < 0.05$) provided evidence that group differences impact service quality perception (Lee and Kim, 2017; Zeithaml et al., 1996). The significant findings from the ANOVA required further post-hoc Tukey HSD tests in order to identify specific group differences, following the procedures for making pairwise comparisons (Hair et al., 2014).

The correlation analysis was carried out in this respect to establish the extent and direction of the relationship between the continuous demographic and behavioural variables across the dimensions of service quality. Pearson's correlation coefficients, represented as r, have been computed to establish the linear relationships; the values range from −1 to +1, and the values also provide the strength and direction of the relationship (Berry et al., 1988). Significant correlations ($p < 0.05$) point out that the frequency of participation and proximity to recreational hubs relate positively to user perceptions of reliability, empathy, and other service quality dimensions. Especially useful in obtaining insight into how specific behaviours and user characteristics relate to overall levels of satisfaction and expectations of services, correlation analysis provides the foundation for targeted service improvements (Gronroos, 2007).

4. Results

This section presents the findings from a survey conducted among 385 respondents' in 22 formal recreation hubs in five regions (Ekurhuleni, Johannesburg, Sedibeng, Tshwane, West Rand) of Gauteng Province. The findings in the current survey would therefore generate in-depth information on service-quality expectations by users of public recreation hubs in Gauteng. Firstly, the results reflect critical established demographic and behavioural patterns, along with key components of service quality related to the impact on user satisfaction and loyalty. The following discourse will analyse the five dimensions of service quality which are tangibles, reliability, responsiveness, assurance, and empathy to analyse the results from the SPSS.

4.1. Demographics

The survey data provided valuable insights into the demographics and behavioural patterns of the respondents'. A sample population of 385 showed that the majority were male, consisting 68.6%, and 83.1% were black, with a notable proportion speaking IsiZulu at 28.3%. The highest percentage of the respondents' were single, at 89.6%. The largest group was 20–25 years at 37.9 %, followed by 26–30 years at 23.1%. The data reveal that there is significant variation in educational attainment: the large proportion had Grade 12 at 52.2%, but there is a notable minority with no qualification at 13.5%, or some education below Grade 12, represented by 13.8%. Their employment status indicates a high unemployment rate, with 69.4% of respondents' reporting unemployment.

Geographically, respondents' were fairly distributed across the regions: West Rand 20.8%, Johannesburg 20.5%, Ekurhuleni 20.3%, Sedibeng 19.7%, and Tshwane 18.7%. Participation in recreational activity was notable, with nearly half engaging in these activities for over an hour each day (47.5%). The program that aimed at the youth is the most attended at 63.9%, whereas adult and elderly programs have lower attendance at 30.6% and 5.5%, respectively. A large majority of the respondents' had lived in the community for more than two years (89.1%), and 92.2% of them live within 1–2 km away from the hub of recreation.

Recreational hubs offered a wide range of recreational activities, with football being the most popular at 37.7%, followed by aerobics at 23.9%, and then walks and runs at 11.7%. The least engaged activities are indigenous games (4.7%), active aging (2.3%), and arts and culture (1.3%). This profile suggested a predominantly youthful, single, and unemployed population positively, favourably disposed towards regular recreation, particularly football and youth programs.

4.2. Descriptive statistics

Descriptive statistics were computed to summarize the demographic and behavioural variables related to recreational activities, see **Table 1**. There were 385 valid responses. The description of gender was represented by an average score of 1.31 (SD = 0.46), indicating that more males responded to the survey. The race was described by the mean of 1.33 (SD = 0.78), ranging from 1 to 4, indicating a diverse racial representation. The Home Language variable ranged a bit more, with a mean of

6.68 (SD = 3.18), ranging from 1 to 11, which denotes a variety of languages spoken by the respondents'. Marital status ranged at a mean of 1.92 (SD = 0.31), indicating that most of the respondents' were either single or married. The age of the respondents' ranged widely, with a mean of 2.71 (SD = 1.25) on a scale from 1 to 6.

Table 1. Descriptive statistics for demographic and behavioural variables.

Variable	Minimum	Maximum	Mean	Std. deviation
Gender	1.00	2.00	1.31	0.46
Race	1.00	4.00	1.33	0.78
Home language	1.00	11.00	6.68	3.15
Marital status	1.00	3.00	1.92	0.312
Age	1.00	6.00	2.71	1.25
Highest qualification	1.00	7.00	2.97	1.24
Employment status	1.00	3.00	1.55	0.86
Region of residence	1.00	5.00	3.00	1.43
Recreation activity participation	1.00	5.00	3.28	0.88
Type of recreation program	1.00	4.00	1.47	0.77
Community residence duration	1.00	3.00	2.88	0.38
Distance to recreation hub	1.00	4.00	1.12	0.44
Activities at recreation hub	1.00	15.00	4.85	3.33

On education, the mean of the highest qualification attained by the respondents' was 2.97 (SD = 1.24), on a scale from 1 to 7, showing significant variation in educational levels. Employment status had a mean of 1.55 (SD = 0.86), reflecting a high unemployment rate among respondents', while current region of residence had a mean of 3.00 (SD = 1.43), indicating a fairly balanced geographical representation. The average participation time in recreation activities daily was 3.28 hours (SD = 0.88) on a scale from 1 to 5, suggesting a high level of engagement. The recreation programs attended had a mean of 1.47 (SD = 0.77), indicating most respondents' only attended a few types of programs.

On average, the length of stay in the community had a mean of 2.88 (SD = 0.38), indicating long-term residency. The average distance to the recreation hub was 1.12 (SD = 0.44) on a scale from 1 to 4, indicating that most respondents' lived fairly close to the recreation hub. Finally, activity diversity in a recreation hub had a mean of 4.85 (SD = 3.33) ranging from 1 to 15, indicating a wide variety of activities provided to the respondents'. Generally, these findings reflect a good understanding of demographic and behavioural characteristics among the respondents' in relation to their recreation activities.

4.3. Expectations of recreation hub users

Table 2 indicates a summary of the descriptive statistics of demographic and behavioural variables of recreation hub users' expectations that were measured. The number of valid responses in this dataset was 385. The expectation that the facility should look visually attractive and comfortable has a high response from the respondents', with a mean score of 3.18 (SD = 0.88) and 3.39 (SD = 0.56) respectively.

They also expected the equipment to be 'modern and up to date' (M = 3.41, SD = 0.58) and 'recreation programs' every day (M = 3.23, SD = 0.86).

Table 2. Descriptive statistics of respondents' expectations for recreation hub users.

Variable	Minimum	Maximum	Mean	Std. deviation
I expect the facility to be visually attractive.	1.00	4.00	3.18	0.88
I expect the staff to be well dressed and neat.	1.00	4.00	3.05	0.86
I expect the equipment used in the facility to be up to date.	1.00	4.00	3.41	0.58
I expect the facility to be comfortable.	2.00	4.00	3.39	0.56
I expect other respondents' not to be bothersome.	1.00	4.00	3.11	0.94
I expect recreation programmes to be taking place every day.	1.00	4.00	3.23	0.86
I expect the programmes to start on time as scheduled.	1.00	4.00	3.11	0.86
I expect the information given regarding the programmes to be accurate.	1.00	4.00	3.44	0.58
I expect what is promised to be delivered.	2.00	4.00	3.44	0.55
I expect the staff to perform their duties consistently well.	1.00	4.00	3.19	0.92
I expect the department to be concerned with quality control.	1.00	4.00	3.30	0.86
I expect the staff to go the extra mile to help respondents'.	1.00	4.00	3.21	0.86
I expect the staff to be patient with respondents'.	1.00	4.00	3.44	0.62
I expect the staff to respond quickly to requests.	2.00	4.00	3.46	0.54
I expect problems to be solved quickly.	1.00	4.00	3.23	0.86
I expect the department to act on respondents' suggestions.	2.00	4.00	3.39	0.56
I expect the staff to be polite.	1.00	4.00	3.11	0.94
I expect the staff to be trustworthy.	1.00	4.00	3.23	0.86
I expect the staff to be competent.	1.00	4.00	3.11	0.86
I expect the staff to be credible.	1.00	4.00	3.44	0.58
I expect the staff to be enthusiastic.	2.00	4.00	3.44	0.55
I expect the staff to give individual attention.	1.00	4.00	3.19	0.92
I expect the staff to understand the needs of the community.	1.00	4.00	3.30	0.86
I expect the programs/facilities to be at convenient locations.	1.00	4.00	3.11	0.94
I expect the staff to make you feel that you belong there.	1.00	4.00	3.23	0.86

Staff were supposed to dress neatly and well. Their general performance of their duties was an expectation; and they were supposed to go out of their way in helping respondents, which received means of 3.05 (SD = 0.86), 3.19 (SD = 0.92), respectively. Other expectations that fell under this category included patience, which returned a mean of 3.44 and a standard deviation of 0.62, and quick response to requests, with a mean of 3.46 and a standard deviation of 0.54. The staff had to be polite (M = 3.11, SD = 0.94), trustworthy (M = 3.23, SD = 0.86), competent (M = 3.11, SD = 0.86), and credible (M = 3.44, SD = 0.58).

Accurate information (M = 3.44, SD = 0.58) was next in order of importance followed by delivery on promises (M = 3.44, SD = 0.55). Other concerns were quality control (M = 3.30, SD = 0.86) and quick problem solving (M = 3.23, SD = 0.86). Additionally, the programs and facilities were to be located at convenient locations (M = 3.11, SD = 0.94). These results give the overall picture of what had been expected

by the respondents regarding the recreation activities and facilities.

4.4. Exploratory factor analysis for SERVQUAL structure validation

Before commencing data analysis, strenuous data preparation ensured accuracy in data entry, dealt with missing values, and checked both normality and potential outliers as indicated in **Table 3**. Skewness and kurtosis coefficients were within the acceptable range of ±2, thus indicating normality across items (Byrne, 2010). In addition, the item *z*-scores were within ±4 range, showing no extreme outliers, hence the suitability for further analyses is confirmed. To establish the dataset's readiness for factor analysis, three criteria were verified: sample size, factorability of the correlation matrix, and sampling adequacy using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. With 385 respondents, the sample size exceeded the recommended minimum of 100 (Hair et al., 2014). The KMO statistic, recorded at 0.750, exceeded the threshold of 0.60, which signifies robust sampling adequacy, while Bartlett's Test achieved significance at $\alpha < 0.05$, thereby affirming the factorability of the matrix (Awang, 2015; Byrne, 2010).

Table 3. Exploratory factor analytics relationship index.

Factor	Item description	Factor loading	Communality	Eigenvalue	% variance explained
Factor 1: Tangibility	I expect the facility to be visually attractive	0.65	0.50	3.2	16.0%
	I expect the equipment used in the facility to be up to date	0.72	0.52		
Factor 2: Reliability	I expect what is promised to be delivered	0.77	0.59	2.8	14.0%
	I expect the staff to perform their duties consistently well	0.69	0.53		
Factor 3: Responsiveness	I expect the programmes to start on time as scheduled	0.70	0.56	2.4	12.0%
	I expect problems to be solved quickly	0.74	0.57		
Factor 4: Assurance	I expect the staff to be trustworthy	0.68	0.51	2.1	10.5%
	I expect the staff to be credible	0.67	0.49		
Factor 5: Empathy	I expect the staff to give individual attention	0.64	0.46	1.8	9.0%
	I expect the staff to understand the needs of the community	0			

Most anti-image correlations were above 0.5, and communalities were generally above 0.3, hence supporting item-level adequacy (Byrne, 2010; Hair et al., 2014; Tabachnick and Fidell, 2007). Based on the EFA results, there was a nine-factor structure that differed from the intended five-factor structure of SERVQUAL (refer to **Table 4**). High factor loadings about the dimensions of tangibility, reliability, and responsiveness brought to light the fact that strong correlations do exist, as evidenced by items such as "I expect the facility to be visually attractive" (loading = 0.65, communality = 0.50) and "I expect what is promised to be delivered" (loading = 0.77, communality = 0.59).

Key statistics for the EFA were a KMO of 0.750, a significant Bartlett's Test ($p < 0.001$), and an explained variance of 61% which, at over 50%, is above the threshold for the social sciences (Tabachnick and Fidell, 2007). However, cross-loadings between assurance and empathy indicate conceptual overlap; results from the literature also caution adapting SERVQUAL to distinctive contexts such as these recreational

hubs (Gronroos, 2007). Further validation via Confirmatory Factor Analysis (CFA) is suggested to confirm whether the nine-factor structure better fits this data than the original five-factor model, thus giving more support to construct validity. Most anti-image correlations were above 0.5, and communalities were mostly above 0.3, which gives good support for item-level adequacy (Byrne, 2010; Hair et al., 1998; Tabachnick and Fidell, 2007). An EFA showed a nine-factor structure to emerge over the five-factor SERVQUAL model, with strong loadings on tangibility, reliability, and responsiveness, whereas the assurance and empathy scales showed overlap. Key statistics were a KMO of 0.750, a significant Bartlett's Test ($p < 0.001$), and an explained variance of 61%, above the 50% threshold (Tabachnick and Fidell, 2007).

Table 4. EFA model fit and factor loadings summary.

Fit Index	Value	Interpretation
Kaiser-Meyer-Olkin (KMO) measure	0.750	Adequate sampling adequacy for factor analysis (Hair et al., 2014)
Bartlett's test of sphericity	$\chi^2 = 1932.106$, $p < 0.001$	Significant, confirming matrix suitability for factor analysis
Total variance explained	61%	Acceptable variance explained for social science research (Tabachnick and Fidell, 2007)
Rotation method	Varimax	Ensures orthogonal (uncorrelated) factors for interpretability
High factor loadings (≥0.4)	Tangibility, reliability, responsiveness	Strong associations for these dimensions across items
Cross-loadings observed	Assurance, empathy	Overlap between dimensions suggests potential conceptual blending

4.5. Cross-tabulation analysis

In **Table 5**, a cross-tabulation analysis demonstrated numerous noteworthy correlations between demographic factors and dimensions of service quality, suggesting that demographic characteristics shape user perceptions regarding various elements of service quality. For example, a significant relationship was identified between gender and the perceptions of reliability (Chi-square = 66.103, df = 9, $p < 0.001$) as well as empathy (Chi-square = 32.974, df = 9, $p < 0.001$), implying that male and female users might prioritize or interpret these dimensions in distinct ways. Age was shown to have a significant influence on confidence levels: Chi-square = 73.519, df = 18, $p < 0.001$. Employment status was also demonstrated to impact individuals' perceptions of responsiveness: Chi-square = 47.747, df = 24, $p = 0.003$. Some variables, however, showed non-significant relationships; for example, the type of recreation program and responsiveness was not statistically significant ($p = 0.076$), indicating that perceptions of responsiveness might hold relatively constant regardless of the specific type of program.

Several demographic variables were found to be significant in terms of expectations about service quality through the cross-tabulation analysis. There was a strong association between gender and trustworthiness, $\chi^2(9, N = 385) = 66.103$, $p < 0.001$, with only 5.0% of the cells having expected counts less than 5. Gender also showed a strong association to responsiveness, $\chi^2(12, N = 385) = 37.594$, $p < 0.001$, as well as confidence $\chi^2(9, N = 385) = 20.208$, $p = 0.017$. Moreover, there was also a significant association of gender with empathy, $\chi^2(9, N = 385) = 32.974$, $p < 0.001$. Marital status significantly related to tangibility, $\chi^2(100, N = 385) = 129.722$, $p = 0.024$ and reliability, $\chi^2(24, N = 385) = 44.744$, $p = 0.006$. Responsiveness was also

significantly associated with home language, $\chi^2(18, N = 385) = 41.725$, $p = 0.001$. The employment status showed significant associations with responsiveness, $\chi^2(24, N = 385) = 47.747$, $p = 0.003$, as well as with assurance, $\chi^2(60, N = 385) = 86.532$, $p = 0.014$. In addition, the age proved to be significantly associated with responsiveness, $\chi^2(45, N = 385) = 98.727$, $p < 0.001$; reliability, $\chi^2(45, N = 385) = 81.626$, $p < 0.001$; and assurance, $\chi^2(18, N = 385) = 73.519$, $p < 0.001$. In addition, length of residence in the community was significantly related to empathy, $\chi^2(18, N = 385) = 73.519$, $p < 0.001$.

Table 5. Statistically significant associations between demographic variables and service quality expectations.

Variable Pair	Chi-square value	Degrees of freedom (df)	*p*-value	Cells with expected count < 5	Minimum expected count
Gender × Reliability (Reliability)	66.103	9	<0.001	1(5.0%)	3.46
Gender × Responsiveness (Responsiveness)	37.594	12	<0.001	7(26.9%)	0.31
Types of Recreation Programme × Responsiveness (Responsiveness)	34.491	24	0.076	20(51.3%)	0.05
Types of Recreation Programme × Assurance (Assurance)	41.725	18	0.001	14(46.7%)	0.05
Marital Status × Tangible (Tangible)	129.722	100	0.024	94(77.7%)	0.04
Marital Status × Reliability (Reliability)	44.744	24	0.006	28(71.8%)	0.01
Marital Status × Responsiveness (Responsiveness)	28.489	18	0.055	19(63.3%)	0.01
Home Language × Responsiveness (Responsiveness)	41.725	18	0.001	14(46.7%)	0.05
Gender × Assurance (Assurance)	20.208	9	0.017	4(20.0%)	0.31
Gender × Empathy (Empathy)	32.974	9	<0.001	3(15.0%)	0.63
Employment Status × Responsiveness (Responsiveness)	47.747	24	0.003	20(51.3%)	0.06
Employment Status × Assurance (Assurance)	86.532	60	0.014	49(62.8%)	0.04
Age × Responsiveness (Responsiveness)	98.727	45	<0.001	34(56.7%)	0.43
Age × Reliability (Reliability)	81.626	45	<0.001	35(58.3%)	0.04
Age × Assurance (Assurance)	73.519	18	<0.001	20(66.7%)	0.03
Community Residence Duration × Empathy (Empathy)	73.519	18	<0.001	20(66.7%)	0.03

4.6. ANOVA analysis

The ANOVA results also represented significant differences in expectations of service quality based on a number of demographic variables. The influence of gender was quite significant with $F(9, 375) = 8.637$, $p < 0.001$, indicating that there were significant differences in the perception of service quality between genders. Home language also influenced this factor, $F(9, 375) = 3.716$, $p < 0.001$, as the language spoken at home may shape perceptions about service quality. Age was found to be significant, $F(9, 375) = 5.795$, $p < 0.001$, indicating that different age groups exhibit different service quality expectations. Regional differences were also noted with, $F(9, 375) = 5.228$ and $p < 0.001$, indicating that the perception of service quality differs geographically. The frequency of daily participation in recreation activities was significant, $F(9, 375) = 3.195$ and $p < 0.001$, indicating that people who participate in recreation activities more frequently may have different expectations. In addition, the type of recreation programs attended influence expectations about service quality, $F(9, 375) = 7.310$, $p < 0.001$, indicating that program choice is related to various levels of

perception about service quality. Taken together, the results indicate that demographic and behavioural factors do substantially influence the formation of service quality expectations within recreational contexts as demonstrated in **Table 6**.

Table 6. ANOVA results for respondents' service quality expectations by demographic factors.

Variable	Sum of squares	df	Mean square	*F*	Sig.
Gender	14.246	9	1.583	8.637	<0.001
Home language	311.102	9	34.567	3.716	<0.001
Age	72.897	9	8.100	5.795	<0.001
Region of residence	87.291	9	9.699	5.228	<0.001
Daily participation in recreation	21.377	9	2.375	3.195	<0.001
Types of recreation programs	33.120	9	3.680	7.310	<0.001

4.7. Post-hoc Tukey HSD analysis

As seen in **Table 7** below, the post-hoc Tukey HSD test results indicate differences in the tangible aspect of service quality perceptions between gender groups. Particularly, the scores of Group 3.80 were lower than the others, showing big mean differences. The greatest difference was between Groups 3.80 and 2.40 with a mean difference of −0.84615, $p < 0.001$ and 95% CI [−1.3363, −0.3561]. A mean difference of −0.80769 ($p < 0.001$), CI [−1.1856, −0.4298], between Group 3.80 and Group 3.00, and another from Group 2.60 were significantly different by a mean difference of −0.68990 ($p < 0.001$), CI [−1.0497, −0.3301]. A significant mean difference between Groups 3.80 and 3.40 is –0.42100 ($p = 0.006$) CI [−0.7697, −0.0723]. Finally, Group 3.00 and Group 2.40 show a significant mean difference of −0.35343 at $p = 0.012$, with a CI of [−0.6641, −0.0428]. All these results point to the fact that tangible aspects manifest considerable variation between gender groups, particularly for Group 3.80 against the rest.

Table 7. Post-hoc test results for significant ANOVA findings.

Dependent variable	Comparison groups (I–J)	Mean difference (I–J)	Std. error	Significance (*p*-value)	95% confidence interval
Tangible (Gender)	3.80–2.40	−0.84615	0.15398	<0.001	−1.3363 to −0.3561
Tangible (Gender)	3.80–3.00	−0.80769	0.11873	<0.001	−1.1856 to −0.4298
Tangible (Gender)	3.80–2.60	−0.68990	0.11303	<0.001	−1.0497 to −0.3301
Tangible (Gender)	3.80–3.40	−0.42100	0.10955	0.006	−0.7697 to −0.0723
Tangible (Gender)	3.00–2.40	−0.35343	0.09760	0.012	−0.6641 to −0.0428

4.8. Correlation analysis

Correlation analysis was carried out to establish the relationship among the demographic variables, behavioural factors, and SERVQUAL dimensions towards establishing service quality perceptions at the recreation hubs in Gauteng, see **Table 8**. The results revealed some significant correlations ($p < 0.05$) for some of the variables. The Pearson correlation coefficients (r) were interpreted as stipulated by Cohen (1988) where $r = 0.1$ to 0.30.3 shows a small effect size, $r = 0.3$, $r = 0.3$, to 0.5,

0.5 a medium effect size and $r > 0.5$, $r > 0.5$ a large effect size. A strong negative correlation was found between the home language and empathy ($r = -0.139$, $p = 0.006$), indicating a small effect size. It would, therefore, imply that linguistic diversity might determine users' perceptions regarding empathy, perhaps because of barriers in communication or cultural differences in service delivery. The type of recreation program attended correlated positively with age ($r = 0.297$, $p < 0.001$), reflecting a medium effect size. Older respondents demonstrated predilections for particular program types, perhaps based on differing physical or social needs and therefore a rationale for the provision of programs that can be described as a demographic profile. There was also a strong negative association between distance of recreation hub from users homes and perceptions of empathy: $r = -0.258$, $p < 0.001$, $r = -0.258$, $p < 0.001$, indicating medium effect size. Users at greater distances from the hubs perceived their service providers as less empathetic, suggesting a moderating effect of distance on user perceptions. The tangible aspects had a highly positive significant relationship with reliability ($r = 0.505$, $p < 0.001$, $r = 0.505$, $p < 0.001$). This suggests that end users associate the quality and maintenance of the physical aspects with the dependability of the service. Responsiveness was highly related positively to reliability ($r = 0.452$, $p < 0.001$, $r = 0.452$, $p < 0.001$); indicating medium effect size. This would suggest that prompt service responses enhance perceptions of overall reliability, reinforcing the interconnectedness of SERVQUAL dimensions. Empathy and assurance were positively correlated ($r = 0.322$, $p < 0.001$, $r = 0.322$, $p < 0.001$), reflecting a medium effect size. This interrelation would suggest that users perceive staff competence and trustworthiness as closely tied to their understanding and consideration of user needs.

Table 8. Significant correlations between demographic factors and service quality expectations.

		Gender	Race	Home language	Marital status	Age	What is your highest qualification?	Employment status	Which region you currently stay?	How long do you participate in recreation activities per day?	Which types of recreation Programme do you attend?	How long have you been staying in your community?	How far is the recreation Hub from your home?	Which of the activities are offered at the recreation Hub?	Tangible	Reliability	Responsiveness	Assurance	Empathy
Gender	Pearson Correlation	1																	
	Sig. (2-tailed)																		
Race	Pearson Correlation	0.081	1																
	Sig. (2-tailed)	0.114																	
Home language	Pearson Correlation	−0.139**	−0.119*	1															
	Sig. (2-tailed)	0.006	0.019																
Marital status	Pearson Correlation	−0.036	−0.052	0.054	1														
	Sig. (2-tailed)	0.476	0.312	0.292															
Age	Pearson Correlation	−0.032	−0.028	0.014	−0.358**	1													
	Sig. (2-tailed)	0.533	0.581	0.784	<0.001														
What is your highest qualification?	Pearson Correlation	0.041	−0.024	−0.053	0.033	0.127*	1												
	Sig. (2-tailed)	0.420	0.644	0.297	0.513	0.012													
Employment status	Pearson Correlation	0.030	0.049	−0.011	0.052	0.078	0.120*	1											
	Sig. (2-tailed)	0.563	0.342	0.836	0.313	0.125	0.018												
Which region you currently stay?	Pearson Correlation	−0.008	0.030	−0.026	0.051	−0.027	−0.075	−0.002	1										
	Sig. (2-tailed)	0.878	0.562	0.613	0.314	0.594	0.140	0.970											
How long do you participate in recreation activities per day?	Pearson Correlation	0.082	0.160**	−0.067	0.094	−0.036	−0.011	0.005	0.023	1									
	Sig. (2-tailed)	0.110	0.002	0.188	0.066	0.478	0.828	0.929	0.650										

Table 8. (*Continued*).

		Gender	Race	Home language	Marital status	Age	What is your highest qualification?	Employment status	Which region you currently stay?	How long do you participate in recreation activities per day?	Which types of recreation Programme do you attend?	How long have you been staying in your community?	How far is the recreation Hub from your home?	Which of the activities are offered at the recreation Hub?	Tangible	Reliability	Responsiveness	Assurance	Empathy
Which types of recreation Programme do you attend?	Pearson Correlation	0.044	−0.019	−0.037	−0.114*	0.297**	0.007	−0.014	0.051	0.113*	1								
	Sig. (2-tailed)	0.392	0.703	0.469	0.025	<0.001	0.893	0.790	0.319	0.026									
How long have you been staying in your community?	Pearson Correlation	−0.006	−0.031	0.065	0.012	−0.026	−0.015	0.020	−0.026	−0.053	−0.170**	1							
	Sig. (2-tailed)	0.911	0.540	0.205	0.810	0.612	0.775	0.700	0.607	0.295	<0.001								
How far is the recreation Hub from your home?	Pearson Correlation	0.005	0.028	0.008	0.041	−0.049	−0.105*	0.036	0.001	0.062	−0.258**	0.051	1						
	Sig. (2-tailed)	0.916	0.588	0.883	0.421	0.333	0.040	0.476	0.992	0.227	<0.001	0.321							
Which of the activities are offered at the recreation Hub?	Pearson Correlation	−0.051	0.019	0.047	−0.044	−0.030	0.050	−0.004	−0.089	0.023	−0.220**	0.165**	0.194**	1					
	Sig. (2-tailed)	0.322	0.711	0.357	0.391	0.555	0.329	0.940	0.082	0.650	<0.001	0.001	<0.001						
Tangible	Pearson Correlation	0.074	0.005	−0.089	0.036	−0.025	−0.054	0.062	0.026	−0.049	−0.046	−0.014	−0.023	−0.042	1				
	Sig. (2-tailed)	0.147	0.916	0.081	0.484	0.623	0.288	0.224	0.606	0.333	0.370	0.783	0.657	0.413					
Reliability	Pearson Correlation	0.012	−0.015	−0.072	0.026	0.041	−0.062	0.038	0.016	0.028	−0.022	−0.060	−0.071	−0.022	0.505**	1			
	Sig. (2-tailed)	0.809	0.767	0.159	0.612	0.423	0.226	0.459	0.750	0.583	0.671	0.236	0.167	0.666	<0.001				
Responsiveness	Pearson Correlation	0.006	0.022	−0.007	0.081	−0.013	0.026	0.100	0.030	0.050	−0.015	−0.046	−0.085	−0.044	0.298**	0.452**	1		
	Sig. (2-tailed)	0.910	0.667	0.898	0.110	0.800	0.607	0.050	0.561	0.326	0.762	0.372	0.096	0.391	<0.001	<0.001			
Assurance	Pearson Correlation	−0.016	−0.023	0.028	−0.040	0.020	−0.024	0.048	0.046	0.048	−0.069	0.006	−0.044	0.003	0.197**	0.399**	0.343**	1	
	Sig. (2-tailed)	0.748	0.659	0.579	0.432	0.689	0.641	0.345	0.372	0.349	0.178	0.913	0.390	0.960	<0.001	<0.001	<0.001		
Empathy	Pearson Correlation	0.027	0.004	−0.022	0.033	−0.009	0.018	−0.037	0.011	0.067	−0.022	0.037	−0.064	0.049	0.155**	0.232**	0.120*	0.322**	1
	Sig. (2-tailed)	0.600	0.934	0.670	0.521	0.853	0.724	0.467	0.834	0.190	0.668	0.474	0.212	0.340	0.002	<0.001	0.019	<0.001	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

5. Discussion

The EFA demonstrated an extremely high overlap between the constructs of empathy and assurance, demonstrating a conceptual relationship that needs further investigation. Empathy can be defined as the ability of staff to provide personalized care; the construct of assurance is defined as a believer of trust and confidence in the abilities of the service provider. Users in public recreation hubs consider empathy and assurance as interdependent constructs. This relationship might be more expressed in community-oriented environments where interpersonal contacts are essential. For example, the empathetic behaviours that is, acknowledgments and addressing of user-specific concerns-invoke feelings of trust and confidence simultaneously hence reinforcement of assurance perception. This concurs with Grönroos (2007) contention that the dimensions of service quality often interact dynamically in relationally anchored service contexts. Because of this recreation hubs have the need to get their staff to balance their relational and professional competencies in attending to the diverse expectations of the users.

Furthermore, the research by Madumere et al. (2020) states that, in service industries, empathy and assurance create a complementary effect in developing consumer loyalty. This justifies the fact that an empathic attitude advances the cause of building trust, where the authors have asserted that “personal attention alongside promises of proficiency serve to develop loyalty”. The meaning invested in their interrelating roles is consistent with the conceptual similarities that form the basis for the exploratory factor analysis in the present study. Knox et al. (2020) discuss the role of empathy in the relationships that practitioners have with their clients, including how empathy engenders trust and enhances the quality of care that they experience. This directly supports the thought that acts of empathy may foster confidence and build feelings of assurance, especially in community-oriented environments when interactions with other people are salient.

Moreover, the identification of new dimensions, such as program quality and community involvement, challenges the traditional SERVQUAL model. Program quality covers user expectations with respect to the diversity, approachability, and timeliness of recreational services. Community involvement, on the other hand, gives emphasis to participatory and inclusive methods of service delivery (Dattilo et al., 2019; Tumsekcali et al., 2021). These added dimensions point to some limitations in the SERVQUAL model for capturing such complex needs, which are typical in public service settings like recreational facilities. As Menezes et al. (2020) have noted, this study represents an important point in focusing attention on the need to adapt service quality models in order to capture specific expectations from users in specific settings. The intersection of empathy and assurance identified in this investigation underscores the intricate nature of perceptions regarding service quality, especially within public recreational facilities where the interpersonal aspect plays a critical role in determining user satisfaction (Altuntas and Dereli, 2021).

This interrelationship suggests that consumers may not naturally distinguish between feelings of being understood (empathy) and having confidence in the capabilities of the provider (assurance). Rather, these dimensions converge in creating a more holistic understanding of relational quality. Huang and Rust (2021) made this

finding, which challenges the traditional delineation of these dimensions within the SERVQUAL model and suggests that relational service environments, such as recreation hubs, require a more integrated conceptual framework for these constructs. Future frameworks may gain from the redefinition of empathy and assurance as mutually dependent elements that jointly impact user trust and satisfaction, particularly within community-focused service settings (Rahmawati and Mawaddah, 2022). The identification of program quality and community engagement as separate facets of service quality further highlights the necessity for customized evaluation frameworks (Chen et al., 2023).

The emphasis on program quality, particularly regarding varied, accessible, and timely recreational provisions, illustrates a user-cantered approach that transcends conventional standards of dependability and attentiveness. Similarly, community engagement brings into light the social value of participatory service practices. This corresponds to the increasing emphasis on user involvement in public service design. These findings find resonance with research that has advocated for service co-creation, whereby users are not passive recipients but contributors to service outcomes instead (Menezes et al., 2020).

Community recreation hubs also hold tremendous potential for the application of a participatory approach in fostering a sense of patron ownership and enhancing patron loyalty, contributing to user satisfaction and social cohesiveness (Grönroos and Voima, 2013). These findings also carry wider implications for the development and measurement of service quality models in comparable public service contexts. The traditional SERVQUAL with its set dimensions could not capture the dynamic and contextually relevant aspects critical for user satisfaction in community-based services. Program quality and community involvement in its recognition are therefore sure to compel scholars and practitioners to get thinking about the measurement of service quality in a way that captures relational, participatory, and contextual subtleties inherent in the public service context. In so doing, service quality frameworks have more significant power to obtain a comprehensive insight into users' expectations and experiences with a view toward guiding specific improvements in service provision.

This again points out how this imperative shift of emphasis away from the technical or functional elements in service delivery requires a relational and community focus. That the role of program quality and community involvement in the rise of empathy is related to assurance indicates that users place significant importance on experiences which tie them both to the service provider and to their larger community. The relational and participatory underpinning of these constitutes an important aspect of public recreation hubs, usefully engaged in promoting inclusivity, building trust, and ensuring sustained engagement. These insights will place service managers and policymakers in a position where they can devise strategies to better meet the complex and dynamic needs of users in community-oriented contexts.

This correlation between empathy and assurance confirms that changes in the service delivery relationship are necessary. It also shows that user satisfaction could be based on emotional involvement and customized interaction, rather than just on professional competencies. For instance, this relationship, in public recreation facilities, suggests the paramount importance of training programs to enhance relational and technical skills of employees. Findings also reveal that perceptions of

community participation and compassion could be enriched through mechanisms for user feedback and collective decision-making procedures, thus encouraging loyalty and long-term satisfaction among users.

Inclusion of such aspects of service quality as program quality and community engagement reflects shifting user expectations within the communities. The findings indicate that recreational hubs, in addition to being physical sites of activity, are also very important social and emotional anchors in the community. This thus necessitates the duality of recreational hubs in relation to conceptualizing the service quality functionally/operationally with a balance in relational and participatory elements.

For example, the quality of a program is not limited to the variety of the offer, but it is also about how this offer caters to cultural, demographic, and social needs at the local level. In accordance with the principle of service delivery on the ground of equity, the issue here is one of inclusivity, and the services should actually mirror varied identities and priorities within a community. This study defines it as a process in which users are given opportunities to participate actively in designing, implementing, and assessing services. Given that much community input or collaboration can be utilized at little extra cost to optimize service delivery, an inclusive approach of this nature can prove particularly helpful in resource constrained environments.

These approaches align with empirical findings regarding co-creation within public services, which have revealed that the engagement of users in service processes fosters greater trust, satisfaction, and enhances the perceived legitimacy of service providers (Osborne et al., 2016). The findings have significant implications for policy making and managerial practices in public recreation services. Policy makers need to understand that traditional service quality models, such as SERVQUAL, though foundational, might poorly respond to the dynamic and relational needs of users positioned within community contexts. As such, policy makers may want to revise quality standards to include elements like program flexibility, user participation, and relational quality in order to better ensure that measures for service evaluation fit with contemporary user expectations.

Integrating mechanisms for feedback from the users within the context of regular service evaluations will be liable to produce practical insights for continuous improvement, thereby ensuring that services reflect changing community needs. This research offers richer theoretical explanation of service quality and extends the appropriateness assessment with regards to suitability regarding the SERVQUAL framework on public recreation hubs, adding further relevant dimensions. Given the quality of the program and community involvement represent two different factors, it underlined that models must be adjusted to the sector, as previously claimed by Tumsekcali et al. (2021), considering some contextual variables when assessing perceived service quality.

These findings also establish a platform for further research on the relational dynamics concerning service quality. The study enhances holistic user-expectation knowledge by showing how conventional dimensions interact with the emerging construct of community engagement. Such a theoretical contribution has high relevance for community-oriented services, whose nature is inherently relational and contextual in shaping user experiences. The volatility dictates the construction of a

service quality model that captures the static aspects-tangibles and reliability-but also dynamic ones like program quality and community involvement.

6. Limitations

The present research utilized a cross-sectional methodology, collecting data at a singular moment in time (Wang and Cheng, 2020). Although this approach is efficient for recognizing correlations between various dimensions of service quality and user satisfaction, it limits the capacity to draw causal inferences. The direct impact of particular service quality dimensions on user satisfaction remains ambiguous, as it is uncertain whether other latent variables play a role in the established associations. In addition, cross-sectional data cannot capture even how users' perceptions change with time, especially those influenced by seasonal changes in the use of recreation hotspots or continuous improvements in services. This limitation therefore affects generalization since the fluid characteristics of user expectations and experiences may well be underrepresented, according to Almeida and Goulart (2017).

Subsequent studies can address these limitations by adopting longitudinal designs to monitor changes in users' perceptions and satisfaction over longer periods of time (Wang and Cheng, 2020). This approach would provide even more specific insight into how the use of service quality improvements impacts user experiences over time, along with patterns of satisfaction and loyalty. Another strong approach would be a mixed-methods study that combines quantitative measures with qualitative deep dives. The inclusion of interviews or focus groups has the potential to reveal intricate user expectations and yield a more comprehensive insight into the relationship between dimensions of service quality and user satisfaction (Creswell and Clark, 2017). Moreover, experimental methodologies, including randomized controlled trials (RCTs), may ascertain causal connections between particular service interventions (for instance, improved program offerings or staff development) and user outcomes. The methodologies discussed would enhance the reliability and relevance of forthcoming research endeavours (Cartwright and Hardie, 2012).

In fact, the geographic focus of this research in one province limits the generalization capability to areas that are different in socio-economic, cultural, or demographic perspectives. In fact, the unique challenges and opportunities of the chosen study area, such as the diverse needs of the users and the scarcity of resources, may hardly be generalized to other settings. Further research should be multi-regional studies or comparative analysis to enhance the generalizability of findings. Further investigation on perceptions of service quality across provinces or countries would achieve a wide understanding and show both regional and universal patterns concerning service delivery (Anuar et al., 2019; Huang and Chang, 2021).

While stratified random sampling facilitated representativeness among key demographic segments in Gauteng, local-level representativeness of responses from certain marginalised populations is not guaranteed (Ahmed et al., 2021). For instance, those with geographical or socio-economic barriers to using recreational facilities may be poorly represented in the sample. This could lead to biased findings and a loss of the depth in the lived experiences of marginalized communities. Future studies should, therefore, consider the use of oversampling or focused recruitment methods to increase

representation and diversity, especially with regard to underrepresented groups. The engagement of community organizations or the use of outreach programs may enhance recruitment techniques and provide greater depth into the expectations of users (Joseph and Malhotra, 2021).

However, modifying the nature of the SERVQUAL model for public recreation facilities was problematic in effectively capturing the unique dimensions of service quality applicable to this particular context. Although these enhancements accounted for key issues concerning program quality and community involvement, the adapted tool might still fail to take into consideration other localized or nascent aspects of service quality. Potential biases in item interpretation or incomplete coverage could limit the findings. The modified SERVQUAL instrument can go through iterative pilot testing to overcome such limitations.

It is also possible that future research will endeavour to develop newer tools for community-based recreational programs, in a participant-administrator-led thrust. Notwithstanding these limitations, the present study provides a very important foundation for an understanding of the perceptions of service quality for recreational facilities. Results highlight key areas where improvements should be made and provide a foundation from which future studies can build upon and advance these findings. Longitudinal designs, mixed-methods methodologies, and broader sampling could further develop the knowledge of user satisfaction and loyalty across a wide range of contexts. Second, the ongoing refinement of service quality frameworks will keep them relevant and able to adapt to the growing needs of public recreation services. This will not only advance theoretical learning but will also continue to realize concrete strides in service delivery itself and foster greater community participation and health.

7. Recommendations and practical implications

Various scheduled maintenance programs should be developed by the managers of recreation hubs in Gauteng to enhance the level of cleanliness, functionality, and aesthetic appeal. A certain budget was necessary for the renewal of the equipment and infrastructure. The facilities should be checked regularly to ascertain any possible wear and tear circumstances that could occur, thereby giving a curative measure beforehand. These will help to improve users' perceptions of the tangible environment as well as their judgments about reliability and consistency of the services.

Reliability can be enhanced through the adoption of systematic operational strategies (Khan and Ramachandran, 2021). Recreational facilities ought to establish service-level agreements (SLAs) that outline specific timelines for the repair of equipment and other maintenance activities. The utilization of digital resources, including maintenance tracking systems and scheduling applications, can optimize operations and facilitate prompt interventions. The formulation of transparent communication protocols aimed at notifying users regarding service interruptions or updates cultivates trust and accountability.

Tailored training initiatives for personnel can proficiently tackle essential dimensions of SERVQUAL:

- Empathy: The role-playing activities will be assisted by workshops on active listening and cultural awareness to understand and respond to the diverse user needs.
- Assurance: Certification of both technical skills and communication should be done to ascertain staff competence and instil user confidence. Training programs should also be updated regularly based on user feedback and any changing needs for the services provided.
- Recreational facilities should develop programs to meet the particular needs of each of the identified age groups:
- Youths' and seniors' recreation programmes scheduled at convenient times.
- Events to bring the whole family together, including days of family active recreation and cultural fairs for all ages.

Collaborations with educational institutions and community organizations aim to recognize and remedy deficiencies in current programs, thereby ensuring inclusivity and pertinence. Ownership and confidence are inspired in participants with community engagement. It is here that local recreation facilities should make sure that user advisory boards exist to provide the venue for participants to give input and to share in the decision-making process. Programs such as workshops and outreach activities to underserved populations also provide inclusion opportunities. Further, addressing logistics, shuttles for events, ensures equal opportunities for people in further distances.

Continuous evaluation mechanisms are necessary for the sustenance of service quality. The recreation hubs shall, on a quarterly basis, undertake a user satisfaction survey linked to actionable metrics to find out the gaps in the service and take remedial measures. Real-time feedback on service through suggestion kiosks or mobile app-based feedback allows users to make representations that must be listened to and acted upon. These insights should be employed to continuously upgrade programs and service delivery to match user expectations.

Effective resource distribution can improve the quality of services. Policymakers must optimize their investments in:

- Accessibility: Provide subsidies or fee waivers for disadvantaged groups to promote equitable participation.
- Staff development: This should be done to ensure that staff has a high competency and relational skills through the Community Recreation Management Skill programs among other overarching qualifications.
- Infrastructure: Avail facilities that are reflective of the socio-cultural diversity characterizing the Gauteng community for more inclusivity and satisfaction among users. The correlation in resource allocation with the identified dimensions of service excellence will enable sport hubs to retain user loyalty.

These recommendations outline some helpful measures toward service quality improvement for recreation hubs in Gauteng by targeting tangible aspects, operational reliability, personnel training, program alignment, community involvement, and mechanisms of assessment. In addressing these diverse areas, managers and policymakers will, over time, be in a position to create a service environment that addresses the dynamic and diversified needs of customers. Implementation of these

actions shall, therefore, contribute toward ensuring better satisfaction by users and long-term sustainability and inclusiveness of public recreation services.

8. Conclusion

The study examines perceptions on the quality of service in recreational hubs, using an adapted SERVQUAL model and providing insights into key service dimensions and user expectations. The results pointed out that the traditional SERVQUAL dimensions were perceived differently by users: tangibility embraced clean, modern, and comfortable facilities; reliability included consistent and dependable services; responsiveness related to timely staff support; assurance referred to competent and trustworthy staff; and empathy showed that staff understood the users and were aware of community needs. It has emerged that, other than the classic model, the EFA has shown other dimensions related to accessibility and community involvement, which could explain how users of recreational hubs perceive a more complicated setting of the services than the five basic dimensions put forward by the SERVQUAL.

These findings also carry practical implications for service quality management at recreational hubs. Managers are encouraged to invest in facility maintenance, enhance staff training with emphasis on responsiveness and empathy, and ensure that programs are inclusive of users' needs. Emphasizing community engagement and accessibility can instil attachment among users, thereby encouraging user loyalty and satisfaction. Recreational hubs could therefore do better in reconciling user expectations with an approach that brings inclusivity and responsiveness into one service environment by addressing these identified dimensions.

Theoretically, this study contributes to the literature on SERVQUAL by adapting and validating the model in a recreational hub context-a community-based setting that requires unique service approaches. This study extends the understanding of how traditional service quality dimensions can be applied and adjusted for capturing the specific needs of the recreational hub users and refines the framework for future studies in service quality within community-oriented similar environments.

Though useful, it is a limited study. In other words, the limited geographical focus on Gauteng Province and representativeness of the sample restrict the generalization of such findings in other regions or among various demography. The limitations can be minimized if the future research incorporates longitudinal studies, involves qualitative data for deep insights, and also includes diverse recreational contexts.

In other words, perception and adaptation of the service quality expectation play a significant role in fostering community well-being at the recreational hubs. Adaptation to models of service quality is a continuous process since user expectations keep on changing day by day for the recreational hub to continue performing its function of serving the diverse needs of its community effectively.

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