



Faculty of Economics and Business

**Effects of Sports Service Environment towards Users' Satisfaction,
Loyalty, and Reuse Intention in the Public Sports Facilities in Sarawak**

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**Doctor of Business Administration
2024**

Effects of Sports Service Environment towards Users' Satisfaction, Loyalty,
and Reuse Intention in the Public Sports Facilities in Sarawak

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A dissertation submitted

In fulfillment of the requirements for the degree of Doctor of Business Administration

Faculty of Economics and Business
UNIVERSITI MALAYSIA SARAWAK

2024

DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The dissertation has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.


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ACKNOWLEDGEMENT

My deepest gratitude goes out to Professor Dr. Lo May Chiun for her unwavering guidance, invaluable support, and encouragement throughout this dissertation journey. The direction and quality of this project have been greatly influenced by her wisdom, patience, and insightful feedback.

It is also my great pleasure to acknowledge the valuable contributions, constructive criticism, and scholarly guidance provided by the committee members during my proposal defence. In recognition of the quality resources, facilities, lecturers, and academic environment provided by University of Malaysia Sarawak, the Faculty of Economics and Business, I would like to express my sincere appreciation. Not forgetting too, my fellow course mates for any assistance rendered towards the completion of my dissertation.

Moreover, I would like to acknowledge the assistance, resources, and inspiration provided by Sarawak Sports Corporation, especially the Chief Executive Officer and the management team for their valuable insights, as well as those who took part in the survey for data collection.

I am also deeply grateful to my family for their unconditional love and understanding during my study. The unwavering support of my family has been encouraging and helpful. Last, but not least, I wish to thank all those who contributed directly or indirectly to this dissertation. Your support is greatly appreciated.

ABSTRACT

Global sports industry has been on the rise with continuous development of sports facilities, serving the purpose of elevating the sporting events and leisure activities among the users. In Sarawak, Malaysia, numerous infrastructure, and public sport facilities have been built but somehow ensuring the facilities remain reliable and desirable could be challenging. This research examined the effects on users' satisfaction and behavioural outcomes in eight selected Sarawak's public sports facilities in relation to the sports service environment. The research attempted to evaluate the impact of several characteristics, such as physical, layout, facility aesthetics, amenities, service quality, comfort, and safety, on users' satisfaction, loyalty, and reuse intention. The method in the research utilised a quantitative survey approach with 162 valid responses who have utilised these sports facilities through a structured questionnaire. By employing SPSS version 29 and Partial Least Square Structural Equation Modelling (PLS-SEM) analyses via Smart PLS 4.0 software tool, the findings revealed significantly positive relationship between facility aesthetics, service quality, comfort, and safety towards users' satisfaction, users' satisfaction and loyalty as well as loyalty and reuse intention. Nevertheless, physical, layout and amenities showed no relationship on users' satisfaction. The study offered management insights to enhance the public sports facilities, improving users' experiences and focusing on long-term engagement. Additionally, it suggested the need for effective management practices, strategic upgrades, operational efficiency, and resource optimisation to ensure sustainability of the sports facilities.

Keywords: Sports service environment, public sports facilities, satisfaction, loyalty, reuse intention

***Kesan Persekitaran Perkhidmatan Sukan Terhadap Kepuasan Pengguna, Kesetiaan,
dan Niat Mengguna Semula di Fasiliti Sukan Awam di Sarawak***

ABSTRAK

Perkembangan industri sukan global dengan pembangunan fasiliti sukan berterusan bertujuan untuk meningkatkan acara sukan dan aktiviti rekreasi di kalangan pengguna. Di Sarawak, Malaysia, pelbagai infrastruktur dan fasiliti sukan awam telah dibina, namun untuk memastikan fasiliti sukan ini kekal berfungsi dan diminati adalah mencabar. Kajian ini menyelidik kesan persekitaran perkhidmatan sukan terhadap kepuasan dan tingkah laku pengguna di lapan fasiliti sukan awam terpilih. Penyelidikan menilai pengaruh faktor seperti fizikal, susun atur, estetik, kemudahan, kualiti perkhidmatan, keselesaan, dan keselamatan terhadap kepuasan, kesetiaan, dan niat mengguna semula. Metodologi tinjauan kuantitatif digunakan dengan 162 respons sah melalui soal-selidik berstruktur. Dengan aplikasi “SPSS versi 29” dan “Partial Least Square Structural Equation Modelling (PLS-SEM)” melalui perisian “Smart PLS 4.0”, terdapat hubungan positif antara estetik fasiliti, kualiti perkhidmatan, keselesaan, dan keselamatan terhadap kepuasan pengguna, kepuasan pengguna dan kesetiaan serta kesetiaan dan niat mengguna semula. Namun, fizikal, susun atur, dan kemudahan tidak menunjuk hubungan terhadap kepuasan pengguna. Kajian ini menyumbang kepada pengetahuan pengurusan fasiliti sukan, meningkatkan pengalaman pengguna, dan penglibatan pengguna yang berterusan. Selain itu, cadangan pelaksanaan amalan penyelenggaraan berkesan, sasaran strategik untuk kerja naik-taraf, kecekapan operasi dan pengoptimuman sumber, penting untuk memastikan kelestarian fasiliti sukan.

Kata kunci: *Persekitaran perkhidmatan sukan, fasiliti sukan awam, kepuasan, kesetiaan, niat mengguna semula*

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LIST OF ABBREVIATIONS

ASUM	Amateur Swimming Union of Malaysia
AVE	Average Variance Extracted
CAGR	Compound Annual Growth Rate
CR	Composite Reliability
DOSM	Department of Statistics Malaysia
FCA	Facility Condition Assessment
FINA	Federation Internationale de Natation
HPC	High-Performance Centre
HTMT	Heterotrait Monotrait
IYRES	Institute of Youth Research Malaysia
LED	Light Emitting Diode
MYSED	Ministry of Youth, Sports, and Entrepreneur Development
NFI	Normed Fit Index
PA	Public Address
PE	Panel Expert
PLS-SEM	Partial Least Square Structural Equation Modelling
QOL	Quality of Life
RM	Ringgit Malaysia
SEA	South East Asia
SRMR	Standardised Root Mean Square Residual
SUKMA	<i>Sukan Malaysia</i>
SSC	Sarawak Sports Corporation

SOR	Stimulus-Organism-Response
QUESC	Quality Excellence of Sports Centres
UGS	Urban Green Spaces
UNIMAS	University of Malaysia Sarawak
VIF	Variation Inflation Factor
VIP	Very Important Person
WOM	Word of Mouth
YAB	<i>Yang Amat Berhormat</i>

CHAPTER 1

INTRODUCTION

1.1 Introduction

The steady rise of the sports industry worldwide in the last decade marked a huge potential growth of the industry to promote an active and attractive centre for people from all walks of life, empowering them to enjoy the benefits of immerse values in terms of entertainment, improving socio-economic and creating a healthy lifestyle. Understandably, the sports sector needs to evolve because it can create more job opportunities that will benefit the local community (Moh et al., 2022). As such, organisations are triggered by the sports industry's growth and change to adopt a more sophisticated strategy that will increase the industry's appeal to investors, enhance fan immersion, and provide greater support for athletes (Deloitte, 2023). Being an emerging source of economic growth, its expansion is noteworthy as it is anticipated that the market will grow to RM2.8 trillion by 2025 and RM3.86 trillion by 2030, with a 6.6% compound annual growth rate (CAGR) (Kumar & Bhalla, 2021).

Through the gathering of various stakeholders involved in the event, such as event sponsors, athletes, transportation service providers, and sports lovers to enjoy matches or recreation, the sports industry can be impactful in elevating the economy (Kersulić et al., 2020). Spectator sport services (like professional football games) are intended to provide fans the chance to socialise as spectators to mingle and be entertained during the sports events (Foroughi et al., 2019). One should also be aware, sports activities have a lot of positive effects on the community or location where they are organised, including social, psychological, and economic effects (Sandrima et al., 2021). In this regard, not only does it

matter to accommodate building and development of multiple sports fields, but allowing local workers to be involved in the process.

Realising the impact that sporting events may have on politics, the environment, ecology, culture, tourism, and the economy, many nations are keen to host sporting events (Papadimitriou et al., 2016). With a growing worldwide audience, sports have an influence on several industries, including tourism, hospitality, and marketing, in which, according to Uvinha et al. (2018), researchers also found that certain local or community-level sporting events are capable to draw tourists and provide business opportunities, apart from global or national mega-events. Moreover, in a study by Ghasemi and Sanaei (2015), they concluded that in Southeast Asian nations like Thailand, Indonesia, and Malaysia, building multi-purpose sports facilities has been effective in strengthening tourism, revenue, creating job opportunities, and spurring infrastructure development.

For sports organisations and governing bodies, finding a balance between economic interests, and maintaining the social unity among the users is a delicate process. It was generally mentioned by Mao and Kim (2021) the main goal of public sports facility service is to expand the quantity and variety of public sports facilities while also standardising their management, conduct regular upkeep, and enhancing, to increase utilisation and best serve the needs of various groups.

In view of the current public sector sports landscape, understanding the intrinsic relationship between servicescape and users' satisfaction, loyalty, and reuse intention in the public sports complex of Sarawak in Malaysia within the vicinity of major selective sports venues emerges as a subject of utmost relevance and interest. This research endeavours to shed a comprehensive light on this significant connection between public service facilities,

underpinned by a meticulous evaluation concerning sports facility users' satisfaction and the effects of servicescape's dimensions of the industry. Additionally, through the application of rigorous cross sectional quantitative data analysis based on user's feedback, the study aims to provide empirically supported suggestions for enhancing Sarawak's public sports facilities, particularly managed by Sarawak Sports Corporation.

1.2 Background of the Study

Sports facilities can be beneficial to society in a number of ways, including boosting mental and physical health, encouraging community involvement and social cohesion, encouraging diversity and inclusion, and producing economic gains (Testa et al., 2023). Whilst modern society has placed an increasing emphasis on having a healthy lifestyle, which has increased participation in sports and led to numerous developments of public sports facilities, Deelen et al. (2018) argued that more insights into the preferences of users and their behavioural patterns of utilising various sports environments are required in order to design tailored policy solutions to boost sports participation levels.

Sports service providers now place more of an emphasis on service quality while also improving operational efficiency as a result of growing customer expectations for higher-quality services and heightened competition (Thilagavathi & Nanjappa, 2023). There are specifications that must be met in the planning, building, and maintenance of stadiums, sports venues, and facilities (Atghia, 2022). Due to its labour-intensive nature, the sports industry can assist developing countries in accelerating economic growth at comparatively low costs, by gaining more attention from both the public and private sectors (Acquah-Sam, 2021).

Despite its ongoing transition towards attaining continual importance, the sports industry nevertheless faces obstacles in confronting challenges in the form of insufficient economic development as well as poor infrastructure (Buraimo et al., 2018). Watanabe et al. (2018) added that many nations are left behind in the growth of international sport and events because they lack the exposure or infrastructure required for taking part successfully. Based on past researches, there have been significant reductions in the quantity and standard of first-class and high-end sports facilities over the study period, causing a major decline in the quality categories of sports facilities (Haydarov et al., 2020).

Prior to that, infrastructure and facilities usually receive attention by the public because they have a visual representation or are plainly described, making it simpler to judge their quality (Arifin et al., 2022). It is also notable that the need for well-equipped and easily accessible sports facilities have increased as more people become aware of the advantages of regular exercise and leisure activities. In order to fulfil the changing demands and requirements of sports' users in this particularly, it is crucial to understand how the level of service of these facilities influences the satisfaction of users. Based on Biscaia et al. (2021), critical analysis in the literature demonstrates studies of sport services quality is a direct antecedent to the satisfaction of customers.

Graham et al. (2021) discussed some of the frequently brought up benefits associated with investing in professional sports infrastructure. These include, for example, increased fan enthusiasm and a stronger feeling of regional identity; a possible link between emerging venues and job growth; and the likelihood that sport infrastructure in a city's centre may stimulate investment in neighbouring city. Prior to that, sports operating organisations and governments should consider both public services and profits for the long-term operation of sports facilities (Yao, 2021). However, too frequently, facilities are constructed and then

rapidly deteriorated (Kayode & Tunrayo, 2022). This results in a decline in the sector's revenue since it will make sports facilities less appealing to users and event organisers (Akinsola et al., 2012).

Over the years, the sports industry has experienced significant growth and transformation, evolving into a global economic powerhouse with far-reaching social and cultural impacts. Notably too, Deelen et al. (2018) found that in the developed nations, a crucial objective is to increase engagement in physical activity and sports participation. Along the years, among of the factors that have strong pulling effects of a city's progressive urban development, are the construction of attractive and modern sport facilities (Ghasemi & OZRUDI, 2021).

The modern sports industry has begun to take shape with the formalisation of organised sports and the establishment of governing bodies in strategically planning for their citizens, with efforts to expand sports to the community and developing sport facilities (Tread & Kenny, 1996). Sports facilities are places with sports functionality, where people physically congregate for outdoor activities, compete in sports games, or watching sporting events, in which they form part of the management of sports infrastructure (Higham & Hinch, 2018). In other words, a sports facility is a single building or a group of buildings used for physical activity, sports practises, and competition in various sports (Zemikael, 2022).

Research carried out by Nguyen and Nguyen (2021) stated that relevance of servicescape in any type of organisation should not be overlooked because it contributes to a positive competitiveness of an organisation, such as quality of service, service delivery process, and spurs a positive brand image, which in turn influences service experience,

consumer satisfaction, loyalty, and repurchase intentions. Pursuant to a study by Nagy and Tobak (2015), they highlighted that sports service providers must ensure suitable infrastructure, prioritise consumer needs, and continually research evolving trends to enhance the sports experience.

Another prerequisite element in shaping users' choices of sports venues are the calibre of sporting activities and facilities available in the premises. In this regard, Ahmedi et al. (2023) imply that servicescape, which includes the physical surroundings as well as design aspects, has a substantial impact on the experiences, perceptions, and behaviours of consumers. It lies in a servicescape surroundings where the space, facilities, atmosphere, and personnel determine the quality of an organisation and become indicators of customer satisfaction, retention, and competitiveness (Othman et al, 2019; Yi et al, 2020 cited in Stephen, 2023).

Thus, it is necessary that one keeps in mind that, like any other organisation, sport and health centres must enhance the quality of the services they offer in order to meet the needs of its users, and it is crucial to pay attention to users as well as observe their overall satisfaction. This will allow these organisations to mould their services to suit current demand while also anticipating and adapting to changes in user preferences (Álvarez-García et al., 2019). Based on a study by Seo (2003), the quality of the service influences the desire to continue using a sports facility, and the intention to continue exercising is anticipated to be influenced by the quality of the service. Subsequently, users feel more confident, develop a sense of loyalty and trust for the facility when they are in a well-maintained sports environment. These supplement Kang and Chung (2013)'s study, whereby customer loyalty is directly tied to organisation sustainability and may be seen as having a major influence on the sports intangible service offerings.

On top of that, other criterion impacting users' preferences for sports underlines the high comfort and attractiveness, as satisfactory determinants towards reusing the facilities. Experiencing comfort during the time spent in sporting facilities has profoundly grown as a component of users' preferences in recent years. Correspondingly, in Lee (2017)'s study, it is highly likely the facilities' comfort and competencies of the personnel influence the user's perception of using the facilities and subsequently lead to intention to exercise. Findings from Greenwell et al. (2002) suggested that users were affected by the perceptions of the physical condition of the facility, and their assessments of satisfaction were, to some extent, shaped by their interactions with the facility.

In most circumstances too, users are inclined towards using beautiful and functional sport facilities (Geidne et al., 2013), which is uniquely attributed to the building infrastructure. In addition to delivering attractive sporting facilities, sports centre managers may scale up the satisfaction and loyalty levels of customers by raising the quality of their services and taking into account all of its facets (Ozrudi, 2022). Basically, the service environment provided also reflects service quality, and the environment includes aesthetics as well as design features of the stadium (Yoshida & James, 2010).

Public service facilities, funded by user taxes, often lack transparent efforts to enhance their performance (Yi & Komatsu, 2010), and there is a likelihood that facility managers may not possess a clear understanding of users' service requirements (Lee & Kim, 2014). Building on Abdullah and Mohamad (2016)'s research, there were some evidences indicating the lack of the appropriate infrastructure, recreational facilities and quality factors that could deter students to participate in physical activity. In addition, majority of local sports facilities are run by public organisations, and these are often considered less effective in ensuring customer satisfaction when compared to private ones (Martínez-Tur et al., 2001).

Therefore, many countries are reshaping their public sector operations with a customer-centric approach, aiming to improve interaction with the public and prioritise their satisfaction, as reflected in Australian National Audit Office (2009)'s study (Chang & Huang, 2023), by simplifying administrative procedures and reducing waiting times for public services to provide greater convenience. As the sports industry continues to evolve, this research presents both challenges and opportunities for sports operators to harness its potential by examining sports service environment factors (i.e., physical, layout, amenities, aesthetics, service quality, comfort, and safety) critical in affecting users' satisfaction, loyalty, and reuse intention in public sports facilities.

1.2.1 Reflection of Sports Evolution in Malaysia

Ministry of Youth and Sports Malaysia (2018) pointed out that the more frequently sports facilities are used, the greater the level of engagement in sports activities. Based on the report from IYRES (2021), one of the key determinants to elevate sports involvement among the community is enhancing the sports facilities. The report added that public facilities capture 14.7% rate, the third most significantly used areas where users engage in sports activities, behind other preferred locations such as recreation parks (26.9%) and home (16.5%).

With the government's support and public enthusiasm for sports, Malaysia continues to witness the development of world-class public sports facilities, the hosting of international events, and the nurturing of sporting talent. On the other hand, subsidies for stadiums and arenas are frequently asserted as economic development initiatives with the belief the associated business operations will spill over into the local community, driving economic growth (Bradbury, 2022). The sports industry not only contributes to the economy but also fosters a sense of national pride and unity through the love of sports among Malaysians.

This broad perspective has raised a global realisation that spending on public sports infrastructure is beneficial for individuals, society, and the economy (Long & Sanderson, 2001).

To accomplish this agenda, over the last decade, Daud (2013) pointed out the Malaysian government has invested in the development of sports facilities across the country under the purview of Ministry of Youth and Sports Malaysia in the public sector, especially when the local private sector sponsors are unable to contribute significantly into sports. It can also be noted that rapid improvements in Malaysia's sports facilities in recent years have led to the development of a significant number of internationally recognised sports facilities to accommodate a diverse range of sporting events, with many of them situated within the National Sports Complex in Bukit Jalil, Kuala Lumpur (Barghchi et al., 2011). This includes state-of-the-art stadiums, sports complexes, aquatic centres, and training facilities.

Accordingly, sources furnished by International Trade and Industry Ministry showed that Malaysians spent roughly RM430 million on outdoor activities, recreational games, and sports (Nadarajah, 2021). Moreover, in a speech presented by YAB Dato' Seri Anwar Ibrahim (2023), as budgeted for 2023, the government has earmarked RM324 million for the advancement of sports, improvements to sports infrastructure, and the enhancement of training initiatives for athletes. These venues provide opportunities for both professional athletes and the public to engage in various sports and recreational activities.

Malaysia has a rich history of hosting a variety of sporting events, ranging from local competitions to prestigious international tournaments. The Malaysian government and businesses have made substantial long-term investments, including building infrastructure facilities, enhancing the transport network, raising the quality of public and private sector

services, stepping up efforts to market the nation's merchandise and image, and achieving worthwhile promotions through international media (Watanabe et al., 2018). The country's well-developed sports infrastructure, government support, and diverse landscapes make it an attractive destination for hosting sports events. Prominently, Malaysia's ability in hosting the Southeast Asian Games on multiple occasions, reflected its commitment to regional sports development and cooperation.

As reported by Bernama (2022), the country had successfully organised the SEA Games in 1965, 1971, 1977, 1989, 2001, and most recently in 2017. Another milestone in Malaysia's sports hosting history was the 16th Commonwealth Games held in Kuala Lumpur in 1998 (Garaat et al., 2014). The event marked a significant achievement for the country, as it became the first Southeast Asian nation to host this prestigious global sporting event. One of the key targets for sport event organisers is to increase attendance (Wu & Cheng, 2018 cited in Chiu et al., 2019). The Formula One Malaysian Grand Prix, held at the iconic Sepang International Circuit in 1999 was a highlight on Malaysia's motorsport calendar (Ministry of Youth and Sports Malaysia, 2021). The event attracted Formula One enthusiasts from around the world, enabling Malaysia to be a favoured destination for Formula 1 enthusiasts.

Becoming the host of these sports events not only showcases Malaysia's sports infrastructure and organisational capabilities but also promotes sports tourism and fosters a sense of national pride. In service-oriented industries like sports venues, the primary focus revolves around people, actively delivering services to meet the needs of users and guests of the venue (Voon et al., 2014). While the quality of sports infrastructure in Malaysia is commendable, there are still ongoing efforts to improve and expand sports facilities across the country. As Malaysia continues to host international sports events and attract sports tourism, there is a commitment to maintaining high standards to meet the expectations of

athletes, spectators, and the global sports community. Additionally, the sports industry's growth, coupled with government support, will likely continue to drive investments in sports infrastructure, enhancing Malaysia's position as a sports destination in the region.

Nonetheless, the existing sports facilities usage in Malaysia have still not reached the optimal utilisation despite many sports facilities were built in recent years. This was evident from the 2019 Malaysian Sports Culture Index Score analysis which indicated the usage within sports facilities domain stood at 46.9, falling under the range of low-level scale (Aman et al., 2020). Later survey by Institute for Youth Research Malaysia showed that the Malaysian Sports Culture Index in 2021 only scored 52%, which is slightly above the moderate range of the index. The index measurement scale uses a range from 1 to 49 (low), 50 to 69 (moderate), 70 to 84 (high) and 85 to 100 (very high) (IYRES, 2021). Therefore, efforts to increase participation rates in physical activity requires further improvements in the long run.

1.2.2 Sports' Facilities Development in Sarawak

Sports development in Sarawak, Malaysia, has emerged as a pivotal component in the state's pursuit of fostering physical fitness, talent development, and community engagement by providing key aspects of sports development in Sarawak, including infrastructure, talent nurturing, community participation, and the state's commitment to promoting sports as a means of social development. The state places importance on sports education, with schools, colleges, and community centres offering comprehensive sports programmes. Through the Ministry of Youth, Sports, and Entrepreneur Development Sarawak (MYSED), which was established in 2022, Sarawak aims to foster a positive impact on individuals and communities, contributing to their physical, mental, and emotional well-

being by working closely with Sarawak Sports Corporation (SSC) and Sarawak Youth and Sports Department (MSNS) (MYSED, 2023).

Aside from the extensive river network and breathtaking mountain ranges used for sporting activities, Sarawak has witnessed the development of numerous sports infrastructure and facilities in many years (Ayob & Bong, 2004). Sarawak's commitment to sports development is evident in its investment in state-of-the-art sports infrastructure, which are currently tasked to SSC to maintain most of the sports facilities. SSC's core functions are aimed to build, run, and upkeep sports facilities for both official events and public usage, whether for competitive sports or leisure activities. Some of the earlier built public sports facilities include State Stadium (1983), Indoor Stadium (1988) and the iconic Sarawak Stadium (1990), utilised for hosting Malaysian Football tournaments, Malaysian Games (SUKMA) and World Football Youth Cup. These facilities not only serve as venues for local and international sports events but also provide accessible spaces for training, recreational activities, and talent identification programs. The development of these notable sports venues can be depicted in Table 1.1, as a testament to Sarawak's determination to establish regional sports centres strategically located across different areas.

Table 1.1: Major Completed Public Sports Facilities in Sarawak

Sports Facilities	Location	Year Completed
State Stadium	Kuching	1983
Indoor Stadium	Kuching	1988
Padungan Hockey Stadium	Kuching	1991
Sarawak Stadium	Kuching	1997
Petra Jaya Hockey Stadium	Kuching	2014
Sarawak Squash Centre	Kuching	2016
Sarawak Shooting Range	Kuching	2016
Pandelela Rinong Aquatic Centre	Kuching	2016
Sarawak Petanque Centre	Kuching	2016
Football Field C and D	Kuching	2016

Table 1.1 continued

Sarawak Lawn Bowl Arena	Kuching	2016
Stadium <i>Bandaraya</i> Miri	Miri	2001
<i>Muhibah</i> Indoor Stadium	Bintulu	1997
Bintulu Stadium	Bintulu	1994
Sibu Indoor Stadium	Sibu	2016
Azman Hashim Community Sports Centre	Sibu	2023

Source: Sarawak Sports Corporation (2023)

Over the years, Sarawak has made remarkable progress in constructing modern sports facilities, creating a conducive environment for athletes, sports enthusiasts, and the public to engage in various sports activities. Moving forward with the continuous sports development, Sarawak Public Communication Unit (2022) informed that the Sarawak government will allocate funds to build more sports infrastructures not only in urban areas but also in rural areas. As interests in sports grow, Sarawak recognises the need for more specialised sports facilities. According to the State Youth, Sports and Entrepreneur Development Minister, Sarawak's own High-Performance Centre (HPC) is in the pipeline for construction under the 12th Malaysia Plan, similarly to the training centre of National Sports Complex in Bukit Jalil (Louis, 2022). He added the international standard cycling velodrome is also anticipated to be constructed within the Sarawak State Sports Complex in Kuching, as reported by Ishak (2023), which would be of equal standard or even better than the National Velodrome.

From basic infrastructure to world-class stadiums, aquatic centres, and specialised sports training centres, Sarawak's commitment to sports development has significantly enhanced the sporting landscape within the state. By investing in a diverse range of sports facilities and promoting a sports-friendly environment, Sarawak continues to cultivate a vibrant sports culture, nurture athletic talent, and encourage active participation in sports across all levels of society.

Though sports and leisure activities are central to the socio-economic development in Sarawak, the sports infrastructure harbours persistent concerns which demand for active intervention and assessment regularly. In Kuching, Miri, and Sibu, there is a scarcity of high-quality football fields, whereas the two football stadiums and indoor stadium in Kuching require refurbishment due to its limited capacity to host world-class events such as the Malaysia Open (Matthew, 2019). Commencing in 2023, MYSED has affirmed its focus on enhancing the existing essential building maintenance works and services, to be undertaken by its agency, SSC (Aubrey, 2022).

Nonetheless, the absence of robust empirical evidence on the dimensions and level of facility quality that primarily contribute to users' satisfaction poses a hindrance to devise targeted strategies for facility improvement in Sarawak public sports facilities. Consequently, stakeholders may struggle to formulate strategic investments and planning upgrades, potentially overlooking critical aspects that would elevate users' satisfaction. Moreover, without a clear understanding of the main drivers for users' satisfaction, there is a risk of misalignment between users' expectations and the offerings of existing public sports facilities. This misalignment can result in underutilised facilities or dissatisfaction among users, undermining the stakeholder's efforts to promote sports participations and active lifestyles.

1.3 Problem Statement

Several pressing issues of the sports complex facilities in Malaysia have been noticeable in national and state levels. A study by Hussein et al. (2023) has revealed many sports facilities are in dire condition due to aging infrastructure, inadequate quality personnel and budget constraints. In terms of physical aspect of the sports facility, they identified common problems such as wear and tear of equipment and amenities as well as structural

deterioration of the build environment. In Sarawak, it was reported the Lundu Sports Complex needs an uplift to ensure the safety of users (Chandra, 2022), while upgrading of existing sports and recreational facilities in Betong division is a priority because of the prolonged usage of the sports complex without proper maintenance, resulting in poor infrastructure condition (Razali, 2023). On top of that, a survey conducted across all districts in Sarawak reflects the sports participation rate among Sarawak's youth is relatively low at 44.9%, stagnating the future development of potential athletes (Louis & Bong, 2022).

Despite the availability of numerous sports facilities, ensuring users' satisfaction has become a key focus for policymakers, facility managers, and sports organisations. However, there remains a significant knowledge gap regarding the specific influence of service environment quality factors on users' satisfaction in these public sports facilities. Despite the state's efforts to provide accessible and diverse sports facilities, the paucity of empirical research on the relationship between sports facilities from the perspective of existing infrastructure quality and users' satisfaction presents a challenge for stakeholders. Without a comprehensive understanding of how the existing facility infrastructure directly impacts users' satisfaction, stakeholders may struggle to make informed decisions and optimise resource allocation effectively to enhance the overall sports experience for users, enticing them to continue to reuse the facilities in the near future and develop a sense of loyalty among them.

To gain clarity and address potential discrepancies between perceived facility quality and actual users' satisfaction, there is a pressing need for in-depth research. Extensive investigations into the influence of facility quality on users' satisfaction for the commonly used public sports sector within major districts in Sarawak would be prioritised, whereby majority of sports facilities are situated within the vicinity of Sarawak Sports Complex in

Kuching, Sibul, Bintulu, and Miri districts. In turn, this would prove useful in grasping the critical determinants that impact users' satisfaction. Hence, uncovering the research gaps is also crucial for informed decision-making, optimising resource allocation, and ensuring a positive and fulfilling sports experience for users, ultimately promoting active lifestyles and community well-being in Sarawak.

1.4 Research Objectives

The main objective of this research is to examine the influence of sports service environment on users' satisfaction, as well as its outcomes towards loyalty, and reuse intention in public sports facilities in Sarawak.

In this study, there are three objectives to meet.

- a. To investigate the relationships between essential service environment attributes (i.e., physical, layout, amenities, aesthetics, service quality, comfort, and safety) and users' satisfaction in public sports facilities in Sarawak.
- b. To identify the relationship between users' satisfaction and loyalty in public sports facilities in Sarawak.
- c. To explore the relationship between loyalty and reuse intention in the public sports facilities in Sarawak.

1.5 Research Questions

This study examines and will address the following research questions.

- a. Will users' satisfaction be influenced by public sports facilities service environment attributes (i.e., physical, layout, amenities, aesthetics, service quality, comfort, and safety) in Sarawak?
- b. Will users' satisfaction in public sports facilities affect loyalty in Sarawak?

- c. Will users' loyalty in public sports facilities affect user's reuse intention in Sarawak?

1.6 Significance of the Study

The study on the influence of service environment facility quality towards users' satisfaction, loyalty, and revisit intention in the public sports sector in Kuching, Sibu, Bintulu, and Miri districts holds substantial significance for various stakeholders, the sports community, and the overall development of the districts. It provides a structured framework to identify specific areas for improvement and informs decision-makers on any deficiencies in services offerings and necessary physical aspects to revamp the overall sports' experiences for users. Additionally, the proposed model allows for comparisons between users' expectations and perceptions of service quality, which can provide valuable insights into potential gaps that need to be narrowed down to optimise users' satisfaction.

First and foremost, the findings of this study will provide valuable insights into the critical factors that affect users' satisfaction in public sports facilities. Proud to be hosting the 21st SUKMA games in 2024, Sarawak is proactively emphasising the upgrading works of existing sports infrastructures throughout the state, besides constantly developing the athletes in preparation for the competition. Under the purview of MYSED, SSC is responsible to handle the sports development and maintain its infrastructures in achieving the organisation's vision as a sports powerhouse. The underlying foundation empowers them to focus on areas that have the most significant influence on users' satisfaction, leading to targeted improvements and enhanced service delivery.

For facility managers and policymakers, a deeper comprehension of users' satisfaction is instrumental in allocating resources efficiently. The study's insights can guide the allocation of budgets, manpower, and efforts towards areas that have the most substantial

impact on user's experiences. By optimising resource allocation, public sports facilities can continuously improve their offerings, ensuring they remain attractive and relevant to users. Furthermore, the study's significance lies in its potential to contribute to the sustainable development of public sports facilities in Sarawak. By identifying areas for improvement, the study could assist in long-term planning and continuously strengthen the facility quality. Over time, sustainable development can be accomplished, which ensures that public sports facilities can cope to the changing needs and preferences of users.

Increasing users' satisfaction in public sports facilities not merely fosters a vibrant and engaged sports community, but satisfied users are more likely to become regular patrons of the facilities, resulting in increased utilisation and participation rates. As users enjoy greater service and values from their sports' experiences, they are more likely to embrace active lifestyles and outlay the groundworks for improved community well-being and public health. Moreover, this study that focuses on users' satisfaction in public sports facilities can act as predictors in promoting sports tourism in the state. Satisfied users are more inclined to recommend the facilities to others, including tourists visiting the region. Also, positive word-of-mouth recommendations can attract visitors' interests in sports-related activities, consequently boosting sports tourism and stimulating economic growth.

This study's outcomes also hold academic significance by broadening the knowledge in the field of sports facility management and users' satisfaction. It provides empirical evidence specifically targeted in major districts in Sarawak, which can serve as a reference for future studies and comparisons with other regions or countries. The study's methodological approach and findings may inspire further research on sports facility management and users' experiences in different contexts. In conclusion, the significance of the study on the influence of facility's servicescape towards users' satisfaction in the public

sports facilities at various selective sports venues in Sarawak extends to the enrichment of decision-making processes, promotion of community well-being, support for sports tourism, and fostering sustainable development in sports facilities.

1.7 Scope of the Study

By applying the servicescape and considering elements from the sportscape's model, which are widely recognised and used in various industries, this study adopted and reconstructed essential characteristics from both models suited to the existing infrastructure of the sports facilities in Sarawak. While there is relatively little control over the sports core service, sport managers could leverage the service encounter of the users by emphasising various environmental factors of the sports facilities (Bitner, 1992). It systematically assesses each dimension of service quality pertaining to public sports facilities and understands how these dimensions influence users' satisfaction based on what are currently offered. For this study, selected public sports facilities in Sarawak, are located in Kuching (State Stadium, Sarawak Stadium, Indoor Stadium, Pandeleda Rinong Aquatic Centre, Sarawak Lawn Bowl Arena), Sibu (Indoor Stadium), Bintulu (*Muhibah* Stadium), and Miri (Stadium *Bandaraya* Miri). The selection of these sports facilities is based on their popularity and frequency of usage for events or competitions. Subjects for the study are those who have visited and used in any one of the sports facilities.

1.8 Definition of Key Terms

1.8.1 Service Environment

The concept of the service environment, sometimes called servicescapes, pertains to the arrangement and holistic presentation of the physical setting, along with other experiential elements that customers come across at service delivery locations (Wirtz, 2018).

a) Physical

Physical items are the components of a physical space that are used to convey explicit or implicit information to users (Bitner, 1992). One characteristic of physical infrastructure is that it is relatively permanent or difficult to move (Marta & Oktarifaldi, 2020).

b) Layout

Layout is about how well the organized text and pictures on a page, make it both visually pleasing and easy for people to grasp the information (Wong, 2011). In other words, Moatari-Kazerouni et al. (2015) also reiterated that a good layout design must meet a set of criteria and objectives, such as area requirements, communication, and safety.

c) Amenities

Amenities are important in understanding quality of life (QOL) since they are what make some locations appealing for living and working for individuals (Mulligan & Carruthers, 2011).

d) Aesthetics

According to Nanjundaiah (2023), Marxist ideology stated the aesthetic value is influenced by structures, and spaces, whereby the perception of beauty is shaped by language and visual norms, which can differ in various settings of building structures, such as the comparison between out-dated architectural design against modern glass-façade buildings.

e) Service Quality

As defined by Nitecki and Franklin (1999), as cited in Nicholas et al. (2022), service quality is characterised by the process of narrowing the disparity between what consumers anticipate in terms of exceptional service and their observations of the actual service

delivered. This process frequently relies on perceptions developed during interactions with the service between a customer and an employee of an organisation (Bitner et al., 1990).

f) Comfort

Gropper (1992) offered a distinctive viewpoint on comfort, stating that everyone seeks it as a basic human need. A broader aspect of seating in sports context involves the seat dimension, accessibility ease and comfort of the seats (Lee, 2003).

g) Safety

As defined by Ekenedo (2010 cited in Christian & Jenewari, 2018), safety is a condition of being free from risk, which might result in injury, death, loss, or property damage.

1.8.2 Users' Satisfaction

Users' satisfaction can be described as an indicator for measuring the level of contentment individuals experience with the services provided by sports facilities (Giese & Cote, 2002).

1.8.3 Loyalty

According to Aliagha et al. (2015), loyalty refers to the emotional attachment that customers develop towards a company. Customer loyalty has a significant impact on enhancing the profitability and long-term viability of the sports service industry, which primarily offers intangible services (Lee et al., 2007).

1.8.4 Reuse Intention

Lee (2017) characterised reuse intention as the willingness of users to repeatedly use services provided by the same sports facilities. Numerous studies have shown that the level

of participant satisfaction at sporting events may be used to predict the extent to which they would participate in the future (Kaplanidou & Gibson, 2010).

1.8.5 Sports Facility

A sports facility is defined as a massive enclosed space that is primarily intended for competitive sports, is capable of hosting sports activities, built and maintained with public funds, and is of an area that requires additional infrastructure (Barghchi et al., 2010).

1.9 Organisation of the Study

There are five main chapters in this study. In Chapter One, the study's overview, and the background information of sports in Malaysia and Sarawak are discussed. Related previous studies are discussed in Chapter Two pertaining to quality of facility impacting users within the theoretical framework, relevant underlying theories, along with the correlation between service environment and users' satisfaction in developing the hypotheses. The research methodology used for the study is then explained in Chapter Three, outlining the study's design, sampling strategy, questionnaire development, pre-testing and analysis of statistics. The remaining two chapters, Chapter Four consists of results from the data analysis, covering respondents' demographics, measurement, and structural models whilst Chapter Five discusses the hypotheses' findings, highlights the implications, limitations in the study and recommendation for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter critically evaluates and analyses relevant scholarly publications pertaining to the influence of facility quality on users' satisfaction. By drawing on existing literature, this chapter highlights the relevant theory applicable to the importance of users' satisfaction as a key indicator of the success and effectiveness of public sports facilities in Sarawak. Then, the chapter explores the concept of service environment and servicescape impacts towards public sports facilities, and its essential attributes for creating a competitive edge in the sports industry. It uncovers the key qualities and characteristics that public sports facilities should possess to deliver a satisfactory and enjoyable sports experience to users.

The subsequent section of the chapter focuses on the relationship of service environment and users' satisfaction, displaying its significance in various industries, including public sports sector. It examines previous research and studies that have explored users' satisfaction in sports facilities and the factors that contribute to high levels of contentment among users. By conducting an in-depth analysis of previous scholarly publications, this chapter aims to provide a comprehensive overview of the research landscape surrounding the influence of facility quality on users' satisfaction in the public sports sector in Sarawak. Ultimately, this chapter serves as a critical component in building a well-informed and evidence-based research framework that contributes to a deeper understanding of the factors that drive users' satisfaction and facility quality in the public sports sector. This study also seeks to deepen the understanding of the effects of users' satisfaction on behavioural outcomes, such as loyalty and reuse intention, towards sports

facilities, by providing valuable insights that can inform strategies to enhance user experiences and drive long-term engagement and utilisation of these facilities.

2.2 Underlying Theories

This study is based on a well-established theory that explains various aspects of user experiences in sports facilities. To understand the relationships between the sports service environment and user perceptions, the fundamental approach in this study lies with the Stimulus Organism Response (SOR). SOR theory offers a methodical way to comprehend how external stimuli affect user's reactions and behavioural actions in a particular environment. Therefore, this theory serves as the backbone in understanding and gaining more insights of the relationships between the environmental elements and users' satisfaction, loyalty, and intention to reuse sports facilities.

2.2.1 Stimulus-Organism-Response (SOR) Theory

Initiated by Mehrabian and Russel (1974), the SOR theory, underscores how people's behaviours and mental states are triggered by their surroundings. According to this model, individuals process the stimuli they encounter and react to the psychological interactions to generate suitable reactions (Zhai et al., 2020; Pandita et al., 2021). The SOR model establishes a connection between stimuli (external factors) that impact individuals (their cognition and emotions) and the responses they display (such as behaviour). Stimulus refers to external forces that influence the cognitive state of an individual (Fu et al., 2021). Conversely, organism represents the internal processes and structures that act as intermediaries between external stimuli and the eventual behaviours, reactions, or responses of an individual. These internal processes and structures encompass physiological, perceptual, cognitive activities, and sensory (Pandita et al., 2021). Another perspective

suggests that organisms include emotions, feelings, and reactions to stimuli (Eroglu et al., 2003), whilst response refers to the reactions and actions individuals exhibit towards organisms (Buxbaum, 2016).

The SOR theory helps explain the internal psychological changes that occur when individuals are stimulated by their environment (Lin et al., 2020). Recognising that human beings act as organisms, could generate emotional and psychological elements, the SOR theory has been extended to include mood, emotions, and attitudes, in response to stimuli (Zhai et al., 2020). Many studies have extensively applied this theory in various environmental settings. Jeong et al. (2020) used the SOR framework to explore the relationships between emotional experiences, functional and emotional values, tourist satisfaction, and destination loyalty in a marathon event, demonstrating that nostalgia from positive past experiences significantly influences intentions through attitude. Similarly, Cho et al. (2019) applied the SOR model to assess consumer behaviour in online shopping, emphasising the model's flexibility in capturing diverse variables. Other scholar, Al-Sulaiti (2022) examined the SOR theory in the context of tourist-shopping behaviour and revisit intentions. In the sports settings, Mabasa and Masitenyane (2024) adopted the SOR model to study spectators' perceptions of sportscape elements in South African women's soccer stadiums, linking these perceptions to satisfaction and willingness to return. Additionally, Lai and Chong (2020) integrated the SOR framework with relationship marketing theory to explore the impact of servicescape on trust, service credibility, and affective commitment among older adults in a rehabilitation context. In the case of this research, the servicescape, which encompasses the physical and non-physical aspects of sports facilities, serves as the stimuli. Users' satisfaction is the dominant organism, while loyalty and intention to reuse represent the responses.

In summary, the SOR theory provides a framework for understanding how individuals respond to stimuli in their environment. By considering the interplay between stimuli, organisms, and responses, researchers can gain insights into the psychological processes that underlie individuals' reactions and behaviours. In the context of sports facilities, understanding how the servicescape influences users' satisfaction, loyalty, and intention to reuse can inform strategies for enhancing the overall user experience.

2.3 Definition of Public Sports Facilities

A sports facility is a crucial component of the material-technical base for programming and producing sports activities for various users, including professional athletes, spectators, and sports organisations (Raic, 1999 cited in Dugalić & Krsteska, 2013). Sport facilities are mainly immovable structures used for sports practice, requiring authorities to give priority to its maintenance, repair, and safety elements (Adiele & Morgan, 2018). In modern times, sports facilities are characterised by their solid constructions and accompanying surfaces that are designed to facilitate optimal sports performance and provide satisfaction to visitors attending sports events (Dugalić & Krsteska, 2013).

Realising that sports facilities are typically government-funded, Liufu et al. (2022) suggested that public sports services should provide high-quality sports events and knowledge lectures on health-related sports activities. As a social institution, a sports centre provides opportunities for people to engage in physical activities and sports (Testa et al., 2023). Lee et al. (2015) found that these facilities provide a wide range of services (i.e., audio/video equipment, coordination for on-site requirements, and designated areas) for a wide range of events. Hill and Green (2012) described single-purpose sports facility as those designed to offer consumers with a solitary type of sporting activity. Multi-purpose sports

facilities, on the other hand, include facilities that offer multiple activities such as gymnasiums, boxing, wrestling, basketball, badminton, volleyball, and other court games. They could either be owned and operated by the private sector or provided by the government, which leases operations to managers who manage them for a profit. The goals of sport facility operations are to supply and offer sporting goods and services to users in a safe, secure manner while also ensuring their satisfaction. This involves looking after public, private, and nonprofit facilities used for sport, recreation, and leisure (Schwarz et al., 2015).

Weed and Bull (2012) argued that sports facilities are integral in attracting conventions or conferences, as these facilities and the events they host have the potential to draw visitors from outside the local market and enhance tourism in existing destinations. Kaplanidou and Vogt (2010) observed that the increasing popularity of including sports games and visits to sports facilities in tourist travel itineraries signifies a shift in motivation and experiential significance compared to traditional event participation. Furthermore, based on Kurniawan et al. (2021), public sports facilities are instrumental in promoting physical activity and encouraging participation in recreational sports activities. It is therefore essential to prioritise both the facility's design and maintenance to guarantee successful service delivery and satisfaction of customers (Lee, 2003). However, many government-owned sports facilities face budget deficits, resulting in their deterioration (Ahmadi et al., 2006; Farsi, 2007 cited in Adiele & Morgan, 2018). Despite the significant subsidies provided by the public sector, funded by taxpayers, for the construction and maintenance of major sports facilities (Coates & Humphreys, 2008 cited in Bennett, 2012), stakeholders involved in their operation and financing are actively seeking additional revenue streams throughout the year. In order to receive continuous support, government must now prioritise the sustainability of

their activities (Cuesta-Valiño et al., 2021). Unlike profit organisations, the government have a social and societal purpose rather than a profit-driven focus (Chen et al., 2019).

2.4 Definition of Service Environment

The service environment relates to the physical elements of the surroundings, such as music, scents, interior design, ambient lighting, and the quantity of staff who may affect customer behaviour (Shirahmad et al., 2021). According to Urich and Benkenstein (2012), a significant factor influencing consumers' assessments of their overall consumption experiences during sporting events is how they perceive the service environments. In most sport environment, the core product of any sports event is the superiority battles during competitions or games between athletes and two teams or more. Unlike the core product, which is unpredictable and beyond the control of managers (Yoshida & James, 2010), the ancillary services of sports facilities, including employees, seating comfort, and layout, are manageable and can be carefully designed to meet user expectations. Besides, the service environment could also influence the whole customer experience and impacts customers' opinions of the service provider's industry positioning and reputation (Sauer, 2016).

As part of the service environment, the term "servicescape," as defined by (Bitner, 1992), refers to the environment in which a service is provided and where interactions between the seller and the customer take place, including the tangible elements that facilitate the service experience. Originated in 1992 by Mary Jo Bitner, the term combines two words "service" and "landscape" to describe service encounters experienced in the artificial setting of the surrounding facilities. The servicescape has the ability to entertain or distract customers, influencing their perception of time, evoking emotions, and shaping their future intentions to revisit (Berry et al., 2006). Previous studies have proposed various

classifications of servicescape dimensions. While Bitner (1992) categorised the servicescape into three dimensions, the specific dimensions may vary depending on the physical environment and the type of service being provided. In another study, Wakefield and Blodgett (1999) identified different servicescape dimensions, including "building design and decor," "equipment," and "ambiance," in which their research focused on leisure settings.

In response to the growing focus on improving sports development, the notion of servicescape has been extended by scholars to a variety of service contexts, such as the leisure, sports, and fitness industries (Kim et al., 2016; Ong & Yap, 2017; Cho et al., 2019; García-Fernández et al., 2020; Jeon et al., 2021). Looking from the perspective of the servicescape, it entails a combination of “service” and “scape”, reflecting on the service environment created prior to the interaction between customers and service providers (Hightower et al., 2002). In addition, Bitner (1992) conceptualised the servicescape as the physical surrounding, consisting of spatial layout, signage, symbols, ambient conditions, artifacts, and functionality. It shows that tangible and intangible components continue to be closely linked to the main product for an iconic sporting event organised in a developing country within a growing sport sector (Zhang, 2015). To fully comprehend the significance in the sports sector, it is also necessary to look at the interaction from the context of users and how servicescape plays a part in engagement between service provider and users in assessing the existing public sports infrastructure.

Looking into the context of sports facility, earlier research by Bitner (1992) built upon the servicescape and eventually conceptualised "sportscares" as the overall physical environment design and the qualities of service staff that encompasses various service encounters, potentially influencing users approach or avoidance behaviours. Additionally, Wakefield and Blodgett (1994) expanded the notion of "sportscape" to include both interior

and exterior elements, such as the stadium environment, quality of scoreboard, facility aesthetics, stadium decorations, seating comfort, available space, signage, and staff quality. Similarly, Wakefield and Sloan (1995) identified factors within this concept that are considered significant in spectators' evaluations of their stadium experiences, such as food and service providers, vehicle parking, fan control, crowding, stadium and amenity cleanliness. Nonetheless, in another finding, Hill and Green (2000) introduced mostly non-fixed elements in the sportscape model, such as service quality (cleanliness, food quality and service, service at the ticket counter, overall stadium services), perceived crowding, safety, security and the time required to reach the stadium. Other related factors also included Devine (2016)'s research, who emphasised the importance of providing access to sports facilities and equipment for individuals with disabilities, ensuring optimal use and practicality.

In an effort to re-evaluate the quality excellence of sports centres, Papadimitriou and Karteliotis (2000) conducted a study to examine the fundamental framework of the QUESC (Quality Excellence of Sports Centres) instrument proposed by Kim and Kim (1995). They proposed a four-factor model, which encompassed instructor competence, facility appeal and management, availability of programmes and delivery, and supplementary services. Building upon this, Alexandris et al. (2004) tested a simplified version of the service quality model recommended by Brady and Cronin (2001) within the context of a health club. The findings supported the three-factor structure designed by Brady and Cronin (2001), which included interaction quality, physical environment quality, and outcome quality.

Investments in physical or hard infrastructure made prior to sporting events can have a lasting impact, such as the creation of a living memorial serving as a tangible reminder of the events for both local residents and future visitors (Girginov & Hills, 2008; Grix et al.,

2015). In parallel, the concept of soft infrastructure outlines the knowledge and skills gained by residents through their involvement in the sport event (Maunsell, 2004). This aspect of infrastructure development consists of various elements, such as providing hospitality training for volunteers, enhancing skills in the service industry, increasing the host territory's ability to compete for international events, and acquiring expertise in organising large-scale events, which eventually contribute to the growth of human capital within the host territory (Solberg & Preuss, 2007).

Expanding on the notion of service quality, Kayat and Hai (2014) emphasised that the evaluation of facilities is an integral part of assessing overall service quality, extending beyond direct service interactions. Nadeau et al. (2008) further explained that infrastructure plays a crucial role in the built environment, encompassing factors such as ease of transportation, availability of sports facilities, entertainment options, and shopping amenities. The effectiveness of these facilities contributes to creating a pleasant experience for visitors and ultimately influences visitor satisfaction (Khairi & Darmawan, 2021). They further mentioned in several types of services how visitors' perception, shaped by their interaction with facilities, significantly influences how visitors perceive the quality of services. Within the tourism industry, various attributes related to infrastructural facilities, such as equipment, communication channels, ambience, and environmental aesthetics are considered tangible elements within the service environment (Tuzovic, 2008). These factors contribute to moulding the overall experiences of tourists and significantly affects their perception of service quality. Overall, the combination of physical and soft infrastructure investments, along with the evaluation of facilities and their impact on service quality, contributes to creating a comprehensive and memorable experience for both residents and visitors in the context of sporting events.

2.4.1 Physical

According to Slack (2004), meeting the physical needs of sports facilities includes providing a safe structure, adequate sanitary facilities, a visually appealing environment, appropriate temperature control, and sufficient space for both work and play. During this stage, Walker (1995) suggests that consumers are primarily focused on the core service offering and may not pay much attention to ancillary services such as the condition of the facility. In response, Baker and Cameron (1996) argue that the furnishings within a service environment, such as furniture, window coverings, and rugs, in essence, shapes the overall perception of the physical environment. The lack of thoughtful design choices for specific infrastructures, like sports facilities, and the improper distribution of trees and lawns can have a detrimental impact on the attractiveness of urban green spaces (UGS) to visitors, as they may not effectively cater to microclimatic conditions and the actual needs of users (Adinolfi et al., 2014; Ugolini et al., 2022).

2.4.2 Layout

The ease of accessibility of a layout affects how quickly users are able to reach where they are heading. The layout of the stadium, the use of space, and the navigational signage all affect how easily people navigate the venue. Within the context of leisure services, the concept of "layout accessibility" refers to the strategic arrangement of furniture, service designated location, doors, equipment, and passageways, as well as the spatial relationship among these elements (Bitner, 1992). This physical layout and design of workplaces have a significant influence on consumers' perceptions of a company (Ornstein, 1992). As such, it is crucial to consider how these elements are organised to create a seamless and user-friendly environment. Based on Wakefield and Blodgett (1996)'s study, a proper layout should not only provide easy entry and exit but also guide customers towards essential service areas

such as restrooms and souvenir stands. By strategically placing these elements, businesses can enhance the overall customer experience and ensure that visitors can easily access the necessary facilities. Additionally, a well-designed building layout goes beyond functionality and, also contributes to a more comfortable environment for the services being provided (Kim et al., 2016).

2.4.3 Amenities

Suharto (2006) defines amenities as elements in a destination that allow visitors to stay in the destination to enjoy or engage with the offered attractions. In reference to Baud-Bovy and Lawson (1998), amenities are any facilities that offer services to visitors to satisfy their needs throughout their stay at a destination. The purpose of amenities is to provisionally satisfy the needs of tourists while they visit specific tourist areas (Hermawan et al., 2019). In this regard, common amenities include rest rooms, shower rooms, conference rooms, changing rooms, retail outlets, food and beverage providers, and dustbins to name a few (Trongjitpituk, 2020). A study by Mohamad et al. (2022) in recreational facilities showed that visitors expected a high level of quality amenities, yet they were content with minimal recreational facilities, provided that prayers rooms and toilets are adequate and clean. Moreover, pleasant amenities of the destination increase the likelihood of attracting in new visitors and strengthen the loyalty of existing ones (Kozak, 2001). Hence, amenities are a critical factor that contributes to satisfaction (Soebiyantoro, 2009).

2.4.4 Facility Aesthetics

Sports venues' overall attractiveness is heavily influenced by aesthetics, which involves elements such as beautiful surroundings, inviting interiors, and the use of stimulating colours (Kiani & Bahrami, 2020). The process of attraction occurs as the

assessment of destination features integrates internal elements (such as personal traits and psychological drives) to evoke favourable emotions (Chen & Funk, 2010).

Facility aesthetics, which include architectural design, interior design, and decor, contribute to creating a pleasant and visually pleasing servicescape (Wakefield & Blodgett, 1996a). Previous research by Şahiner (2016) has shown that customers' perceptions of the service environment can be influenced by their general perceptions of interior design attributes, decoration features, and furniture aesthetics. Most importantly too, aesthetics capture the qualities of the surroundings of the sports facility, such as outdoor landscaping of the attractive gardens and flowers, indoor features or the interiors, which are bright and have a welcoming vibe to enter and stay (Razavi & Delarestaghi, 2014). Accordingly, enhancing the sporting appeal of contemporary cities necessitates an expanded investigation beyond conventional sports infrastructure, extending to the diverse array of open spaces and green areas characteristic of urban landscapes (Lindsey & Darby, 2019).

2.4.5 Service Quality

The concept of service quality, as discussed by Agustinawati and Yusuf (2019), refers to the comparison between the actual performance of a service and the expectations of customers. In the context of sports organisations, service quality is crucial for meeting the needs and desires of visitors. Sangkaeng et al. (2015) identified five dimensions used to measure service quality: tangible (physical facilities and infrastructure), empathy (attention given to customers), responsiveness (ability to provide fast service), reliability (ability to deliver promised services promptly and accurately), and assurance (ability to instil trust in the company's services). Pursuant to a study by Biscaia (2016), quality is referred to the consumer's perception of the excellence of the service provided by an organisation.

Evaluating service quality is the first step in any initiative to increase customer satisfaction (Aydin et al., 2015) . It is crucial for service organisations to identify specific service quality requirements in order to meet customers' expectations (de Oña et al., 2016; Kilibarda et al., 2016).

2.4.6 Comfort

Wakefield et al. (1996) derive the comfort of seats as proximity of seats, their physical condition, and their design which have a direct effect on how comfortable a seat is. In simpler terms, they explained the seating comfort is associated with the physical seat condition as well as the comfort feeling of the distance between the seats. Furthermore, due to the design or condition (e.g., comprising bench seats or chairs with backs, new vs old, padded vs nonpadded), certain seats might offer varying levels of comfort. Seating comfort tends to be a common problem for regular users at leisure service venues who remain seated for extended periods while watching or engaging in some type of entertainment (Wakefield & Blodgett, 1996b). Similarly, Cumming et al. (2021) note that spectators required to stay seated for several hours are likely to find seating comfort a significant issue.

2.4.7 Safety

Kumar et al. (2023) define ‘servicescape safety’ into physical and psychological safety. Accordingly, businesses are actively pursuing methods to enhance safety, both physically and psychologically, in areas designated for social and physical interactions (Berry et al., 2020). Despite safety within service environments being a longstanding concept, it has surprisingly lacked sufficient attention in research studies (Siguaw et al., 2019). These aspects are vital on an individual level as personal safety and at a group level as social safety, both leading to consumers’ behavioural responses (Sayin et al., 2015). While

personal safety in a consumption setting pertains to an individual's physical security and the reduction of psychological anxiety (Haans & de Kort, 2012), social safety, revolves around fostering social connections and relationships in a group, particularly within a communal consumption setting (Slavich, 2020). Physical safety refers to the protection from potential harmful unforeseen incidents, infections or contamination arising from interactions with people, air, or surfaces within a service environment (Haans & de Kort, 2012). In contrary, psychological safety aims to relieve users from mental distress, encompassing concerns such as loss of social connections, fear of illness, depletion of mood, and anxiety related to visiting a service setting (Berry et al., 2020). The presence of physical and psychological safety significantly contributes to the 'well-being' of users (Doverspike & Blumental, 2001), a crucial element for the overall experience within a service environment (Rosenbaum & Massiah, 2011).

2.4.8 Users' Satisfaction

Satisfaction is the feeling of pleasure or disappointment that arises when a person compares the perceived performance or outcome of a product or service against their expectations (Julia et al., 2024). It is crucial for organisations to meet customer expectations and understand their needs in order to ensure satisfaction (Aburayya et al., 2020). In the context of educational institutions, satisfaction levels are often measured by evaluating the student experience, services, and educational facilities (Weerasinghe et al., 2017). This aligns with Wicker et al. (2013)'s notion that all types of sports infrastructure have a positive impact on sports participation in general. Understanding from the sports and leisure point of view, Bodet and Assollant (2011) suggested that satisfaction can be measured within a specific timeframe, either during a particular sports season or it may be conducted without any time limitations. In addition, users' satisfaction can be portrayed as a metric used to

gauge the level of contentment among users regarding the services offered by sports facilities (Giese & Cote, 2002).

The relationship between the services provided and customer satisfaction is a top priority for organisations as it directly affects their overall management (Kharuddin et al., 2020). When visitors' desires are fulfilled and their expectations are exceeded, they experience a sense of satisfaction and happiness (Febriyana et al., 2020). Numerous studies across various disciplines have emphasised the importance of satisfied customers in different business sectors, including the sports industry (Homburg et al., 2006; Theodorakis et al., 2015). Notably, the result from Correia and Esteves (2007) mentioned that spectators' satisfaction and happiness are influenced by factors such as the availability of stadium facilities, sufficient car parking spaces, stadium safety measures, and adequate ticket counter space.

2.4.9 Loyalty

Loyalty is characterised by the emotional connection between customers and a company (Aliagha et al., 2015). It represents a customer's desire to maintain long-term relationships, regularly purchase and use specific goods and services from a particular company, and willingly recommend that company to friends and colleagues (Murali et al., 2016). Loyalty is essentially a way for customers to express their satisfaction with the products or services they receive (Zehir et al., 2011). Loyal customers play a crucial role in enhancing profitability and improving the organisational image by actively promoting the company to their acquaintances (Kandampully et al., 2015). This concept of loyalty applies to various industries, including sports (Gholipour, 2020). Thus, knowing the future behaviour of the sports centre's customers has always been a key element in sports

management, and loyalty is critical for the ongoing success of these sports services (García-Pascual et al., 2021).

2.4.10 Reuse Intention

Lee (2017) interpreted reuse intention as users' willingness to continue using the service from the same sports facilities. Owojori et al. (2021) asserted that the revisit intention is essential in determining the success and long-term viability of refurbishing or repurposing a building. It indicates whether a well-designed building has successfully left a positive impression on visitors and users, thereby encouraging them to return. In the highly competitive hotel industry, Chi and Qu (2008) suggested that the level of destination loyalty among tourists can be assessed by examining repeat visitations. Regrettably, there is an argument suggesting that numerous public sports facilities do not adequately cater to the needs of the public or suffer from mismanagement, which can be attributed, partly due to a lack of specialised management to focus on meeting the requirements of the users (Fried & Kastel, 2020). Additionally, customers' perception of value acknowledgement from service providers can serve as a motivating factor for them to patronise the provider again (Ishaq, 2012). Furthermore, customer satisfaction is paramount for attracting and retaining customers. Rauch et al. (2015) emphasised that hotels failure to meet customers' service quality expectations are less likely to see return visits, regardless of the price offered. Typically, the intention of tourists to revisit a destination is considered an expression of loyalty or a genuine action reflecting their willingness to return (Choo et al., 2016).

2.5 Theoretical Framework

2.5.1 Gaps in the Literature

To date, recent studies on service environment or servicescape impacts in the sports field have been scarce, and not many scholars have ventured in-depth into the public sector with considerations of service environment features affecting satisfaction, which leads to loyalty and reuse intention as outcome qualities. With increasing expectation from users of sports organisation, the gaps of what factors are required for sports facility may vary over time and continuous research can address these gaps. Existing studies in the past few years on the perception of users in sports and recreational facilities were limited to certain elements of service environment, such as factors restricting accessibility (Kruszyńska & Poczta, 2020). Another study by Gao et al. (2022) also involved the effects of accessibility in the China region with essential parameters pertaining to key themes of policy-related constraints, management aspects, service-related factors, and supervisory factors. In recent years, there were also researches on the applicability of using intelligent image processing in improving the safety aspects of public sports facilities (Li & Li, 2021), relationship of facility dimensions, satisfaction, word of mouth communication (WOM), and psychological commitment (Moura e Sá & Cunha, 2019). According to Loranca-Valle et al. (2021), there are not many articles discussing the existence of loyalty outcome, which consists of sub-dimensions, including commitment and trust, along with other variables like satisfaction and service quality in the sports organisation. Moreover, other studies in the sports were limited to quality of service influencing satisfaction and loyalty (Lee, 2017; Jeon et al., 2021; Cao, 2023; Huang & Kim, 2023). Investigation by Siguaw et al. (2019) has expanded the safety element in the servicescape for marketing practitioners with campus and township as their study areas. They emphasised the necessity for further research to validate the incorporation of safety elements as a fourth dimension of service environment, examining diverse populations across various service industries, as the potential consequences of safety

perception on satisfaction, loyalty and behavioural intention may yield varying results. Kim (2021) also suggested more efforts should be made on safety dimension, as one of the realistic quality factors of sports venues. Though the literatures in the past reflected some of the studies' variables, the composition of service environment elements (i.e., physical, amenities, layout, aesthetics, service quality, comfort, safety), as well as the outcome quality (i.e, satisfaction, loyalty, and reuse intention), however, none of the publications include all these factors at once, thus making this study an interesting field to study in Sarawak.

Recognising that the importance of public sports facilities has been increasingly prominent, this area of study has not been extensively evaluated. Prior studies pertaining to users' satisfaction evaluations of sports facilities focused on specific sports and were available at fitness centres in different areas (Triado et al., 1999; Polyakova, 2018; Huang & Kim, 2023; Polyakova & Ramchandani, 2023), and municipal sports centres (Triado et al., 1999; Castillo-Rodriguez et al., 2019). There are also insufficient exploration of service environment features impacting users' satisfaction, primarily in the public sector of sports facilities, managed by public organisation to distinguish the outcomes of users' satisfaction, loyalty, and reuse intention from the context of non-profit organisation in the local region. Based on previous literatures, services and satisfaction in universities and sports venues (Yusof & Lee, 2008; Pilus et al., 2010; Pa et al., 2022; Azram et al., 2023) indicate more insights are needed to better comprehend the correlation of services as well as satisfaction, in supplementary to loyalty and reuse intention. Furthermore, most of the literatures were concentrated on private sectors who may have different views, on how they manage the facilities in consideration of services offered to users as compared to public organisation. Lately, more studies have been carried out in retail services (Lamai et al., 2020; Tran et al., 2020; Zhong & Moon, 2020; Ali et al., 2021; Wattoo & Iqbal, 2022), transportation (Wang

et al., 2020), hotel (Mohamad et al., 2017; Wang et al., 2021) and healthcare (Kurnianingrum & Hidayat, 2020; Rahman et al., 2021; Ai et al., 2022) environments, but it is also essential to understand how service environment features play its roles in bringing changes to user's loyalty and behavioural intention from the public sector context in Sarawak. Thus, the focus on the public sector could prove useful in this study.

In the sports setting, the lack of comparative studies is notable. These studies, which would involve the examination of variations of the impact of service environment components, are relatively rare, particularly across diverse categories of public sports facilities. Given that user's interaction is more intense in collective sports, it would be interesting to look into the factors that influence customer's satisfaction and loyalty in other sports contexts (Moura e Sá & Cunha, 2019). This means that the components of the service environment in other locations and facilities like arenas, stadiums, and community centres must be assessed while accounting for the preferences and actions of various user groups. Such comparative analyses can identify the general infrastructure components that are most important for various facility types and user demographics. Therefore, the undertaking of this research could substantially contribute to the advancement of proper understanding of the dynamics within the service environment of various public sports facilities, particularly in maintaining critical aspects of the existing facilities in accordance to user's requirements and set the groundwork for crafting reliable facility designs for future sports development in Sarawak.

2.5.2 Justification of the Theoretical Framework

Typically, consumers spend more time in the physical spaces provided by fitness centres, sports facilities, and leisure centres than in other service industry settings like banks,

insurance providers, and fast-food restaurants (Kim et al., 2016). Consumers should be the center of facility service, and these establishments should be able to provide top-notch services to assist facility users (Rondeau et al., 2006 cited in Lee & Lee, 2015). Kouthouris and Alexandris (2005) identified sports and sports tourism as a distinct sector of the services industry with special qualities in terms of service quality and the intentions of fans regarding their future behaviour. These distinctions make sports and their venues the principal means of communication between the service provider and the sports fan, and they necessitate specialised research in order to precisely gauge the quality of the customer experience (Gencer, 2011).

Earlier study by Bitner (1992) pointed out three key dimensions of the servicescape. This study also explores how these dimensions relate to internal reactions (i.e., satisfaction with the servicescape) and external responses (i.e., approach/avoidance behaviours, staying, and revisiting). The model forms the foundation for this research to appropriately design a research model most suited to the questionnaire of this study in the public sports sector in assessing the users' satisfaction. As derived by Gómez-Ortega et al. (2023), the physical and functional areas where the services are rendered constitute the environmental dimensions, and it significantly influences a user's initial perceptions of the service. Subsequent to experiencing the service, their behaviours may reflect what they did, either exhibiting approaching or avoiding behaviours, which in turn affect social interactions. Several studies on servicescape have expanded their scope from hedonic to utilitarian value, concentrating solely on the physical aspects (Kwortnik, 2008). However, the social component during service encounters holds considerable significance as an integral part of the servicescape (Wakefield & Blodgett, 1996a). Having said that, there is a substantial relevance of the social

dimension at service encounters as part of the servicescape (Tombs & McColl-Kennedy, 2003a).

In sports contexts, the term "servicescape", also known as "sportscape" (Wakefield & Blodgett, 1996a), refers to the physical location of the service encounter, which is felt by every consumer and frequently has a profound effect on their cognitive, emotional, and physical well-being. The study of people's reactions to environmental cues is called environmental psychology. When it comes to consumer experiences, people interpret the cues from their surroundings, be it either positive or negative, and translate them into information that shapes their reaction, which determines whether they are satisfied or dissatisfied (McKinney, 2004). According to Koenigstorfer et al. (2010), the atmosphere of a sports stadium can be influenced by spectators, event organisers, and the game itself. In this regard, the distinctive atmosphere that exists in stadiums and arenas during sporting events, includes the venue's physical characteristics as well as the behaviours of all those involved, such as spectators and stadium personnel (Uhrich & Benkenstein, 2010; Chen et al., 2013). Similarly, previous studies in sports literature have explored what influences customer satisfaction, focusing on cognition-based factors like perceptions of service and environment quality (Martin et al., 2008; Foroughi et al., 2016) as well as affect-based factors such as pleasure, enjoyment, happiness, and valence (Van Leeuwen et al., 2002; Brady et al., 2006).

Other studies have shown significant linkage to support service environment, satisfaction, and behavioural intention. Berry et al. (2006) investigated humanistic, mechanical, and functional cues that affect client satisfaction. Harris (2007) looked into the connection between workers and how they contribute to creating positive customer experiences. Measurement of both the physical service environment and perception of

service quality was captured via Event Service, specifically designed and tested for use in various sporting event venues (Martin & O'Neill, 2010), proposed that high-quality goods and services that are tailored to the needs of the consumer would result in high levels of customer satisfaction and increase customer loyalty. Additionally, Brady et al. (2006) proposed that the affective response of satisfaction is determined by an individual's evaluation of the quality of the service. Both positive and negative feelings that customers develop with the service interaction are linked to this appraisal (Brady et al., 2006). Besides, future behavioural intentions may be significantly influenced by this service encounter (Martin et al., 2008). In response to research done by Hooper et al. (2013), they came to the conclusion that the tangible cues in the service environment are different from the aspects of the service personnel, and that the two constructs are thus appropriately separated in the model. This means service quality is primarily linked to intangible cues of the service rendered by service personnel. According to these studies, affect and cognition have an equal impact on how satisfaction is formed (Homburg et al., 2006).

Research on customer engagement has highlighted the critical importance of identifying stimulus variables (S) that impact the organism (O) and influence responses (R) within service environments. Incorporating the findings of other researchers, Lei and Xiaoqiang (2021) noted that the SOR models have also been extensively used in the study of consumer behaviour, as in Mattila and Wirtz (2001)' study, suggesting that consumers react cognitively, emotionally, and physically to external stimuli, and that these responses have a comprehensive impact on the actual behaviour of consumers. At the same time, Mei et al. (2021) supported the SOR model as a crucial theoretical framework for researching consumer behaviour. Therefore, the SOR framework can be employed in this study to suggest that an individual's affective and cognitive states could stimulate individual

behaviour rather than environmental stimuli directly influencing it. Consistent with the SOR model, the suggested causal framework in this study (see Figure 2.1) asserts that users' satisfaction is crucial in understanding how the variables (loyalty and reuse intention) and service environment are related. The SOR model, which is seamlessly integrated into the framework, extends the understanding beyond mere satisfaction assessment. It delves into the intricate psychological processes that occur within users in response to the service environment elements. In this model, the service environment serves as the stimulus that inspires the user's feelings (Roschk et al., 2017), as well as triggering internal psychological states within users, the organism. These states encompass a range of emotions, perceptions, and cognitive responses. The cumulative effect of these internal states ultimately results in user's responses, which include satisfaction, loyalty, and reuse intention. This framework allows for further exploration, not confining to only what causes users to be satisfied, but also gaining knowledge of the behavioural outcomes of the satisfaction or dissatisfaction from the experiences of users, such as intentions to reuse and remain loyal to these public sports facilities.

2.5.3 Description of Variables

Fundamentally, the research leverages commonly accepted concepts in the field, such as the service environment and users' satisfaction, which have been widely recognised within the literature of service management and user's experience. In this empirical study, the researcher examines how variables interact in the context of public sports facilities to influence users' satisfaction, loyalty, and reuse intentions in Sarawak, an area which has been relatively unexplored in academia.

There are two main categories of variables being considered in the framework as shown in Figure 2.1, in view of the SOR model. The first set of the variables in this research model is the service environment, which comprises seven key variables. Physical environment includes architectural design, cleanliness, and infrastructure that influence user perceptions and experiences. It is also essential to enhance the comfort and convenience of customers by providing appropriate amenities, such as reliable restroom, parking facilities, and concessions. Another element of users' satisfaction is the layout, the way it is organised spatially, how it is navigated, and how it manages directional flow of users within the facilities. It is also well-established that facility aesthetics contribute to the overall perception of the environment, from the decor to the landscaping to the overall ambiance. For the purpose of enriching immense experiences to users, the term service quality emphasises interactions with staff, responsiveness, and efficiency. Ultimately, the aspect of comfort plays a significant role in ensuring overall users' satisfaction, whereby factors such as seating comfort could affect overall satisfaction level differently. Similarly, the element of safety, which requires both physical and psychological aspects, is crucial in creating an environment where users feel secure within the facility. By adopting this comprehensive approach, this study would be able to thoroughly analyse the intricate dynamics of the service environment and its influence on the user's experience within public sports facilities.

In the second category, the research framework is shaped with the focus on the outcomes of user's experiences, namely users' satisfaction, loyalty, and reuse intention. Users' satisfaction serves as the basis of measurement for the effectiveness of the service environment, reflecting the extent to which users find their experiences positive or otherwise. Loyalty, in both its attitudinal and behavioural forms, indicates the likelihood of users returning to the facility, thereby committing to long-term engagement. Reuse intention

signifies user’s intent to revisit the facility in the future, a critical factor in ensuring the continued success and sustainability of public sports facilities. These three variables are intrinsically connected, with users’ satisfaction serving as the bridge to loyalty and reuse intention. By exploring these variables, this study offers a holistic understanding of the pivotal role played by the service environment in moulding users’ experiences and influencing their decisions to return to these sports facilities.

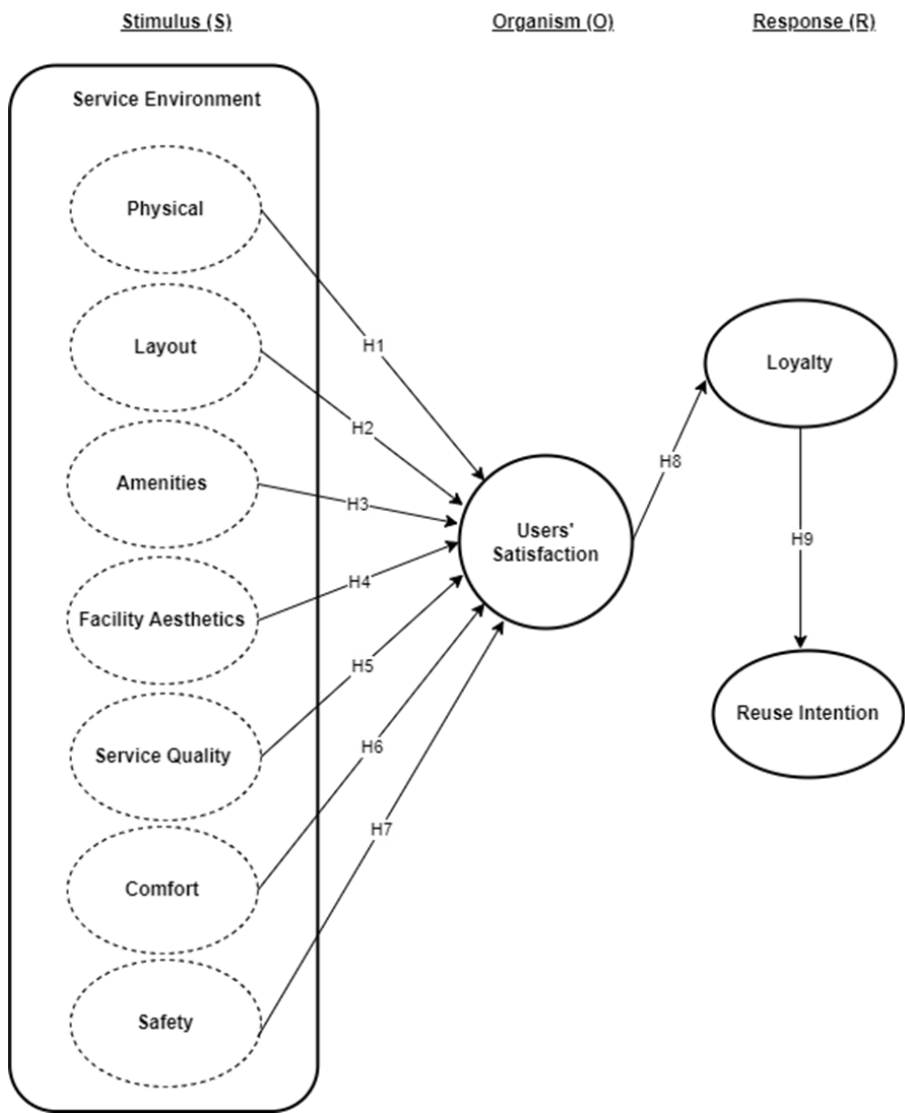


Figure 2.1: Conceptual Framework

2.6 Development of Hypotheses

2.6.1 Relationships between Service Environment and Users' Satisfaction in Sports Facilities

Bitner (1992) underlined the limited empirical investigation and theoretical frameworks addressing the role of physical surroundings in consumption settings, emphasising the continuous efforts of managers to plan, construct, and modify the organisational physical environment. Spangenberg et al. (1996) further observed the importance of environmental psychology, drawing from the concept of how the environment serves as a stimulus that influences consumer evaluation and subsequent behaviour (Donovan & Rossiter, 1982). These atmospheric responses can be classified as either positive (approach behaviours), wanting to explore and stay in a facility, or negative (avoidance behaviours), involving a reluctance to spend time in a store or facility (Mehrabian & Russel, 1974).

Building upon service environment, the concept of servicescape introduced by Bitner (1992), Wakefield et al. (1996) conceptualised the stadium environment as the "sportscape." Although servicescape typically comprises three primary environmental dimensions: ambient conditions, space/functions, and signs, symbols, and artifacts, the sportscape particularly places greater emphasis on two specific dimensions: space/functions and signs, as well as symbols and artifacts. This distinction is made because team management has more control over these two dimensions, whereas controlling ambient conditions in outdoor sporting environments is often seen as more challenging. Additionally, Karimi et al. (2020) as cited in Alizadeh and Cobuliev (2022) inferred that there are positive relationships between the elements of environment, structure, space, colour, harmony, and light with the loyalty of sports customers. As reflected in Ryu and Jang (2007)'s research, customers'

impressions of a sports facility's quality and excitement levels may be directly impacted by its spatial arrangement, which can also indirectly affect their willingness to return.

Expanding on the definition of servicescape, Bitner (1992) associated it with the comprehensive physical environment perceived by users, including elements such as facilities, interior design, furniture, signage, temperature, noise, and cleanliness. This definition emphasises that the servicescape extends beyond the built physical surroundings and also entails anything observable that affects customers' perceptions or behaviours (Kim et al., 2016). Later interpretations of servicescape includes " anything that is tangible surrounding the user during the service engagement transaction" (Hightower & Shariat, 2009). In the context of recreational sports, the core product factors that influence customer's perceptions of facility and service quality, consist of facilities sufficiency, facilities operations, services, and information (Howat et al., 1996).

Customer's satisfaction results from the combination of emotional and cognitive responses, with service quality acting as an antecedent to overall satisfaction based on customers' cognitive evaluations of a service provider's performance, and aids in comprehending the loyalty of customers (Howat & Crilley, 2007). Additionally, Torkildsen (2005) observed that involvement of individuals who utilise the facilities for recreational sports activities would be more satisfied with the availability of various physical sports amenities such as volleyball or badminton courts and types of sports programmes offered (e.g., games, competition, coaching clinics). It is therefore important in identifying key drivers of the services, contributing to consumer satisfaction in Malaysian recreational sports facilities. Such insights could guide managers in formulating strategies to enhance customer satisfaction (Ampofo-Boateng, 2009).

The attractiveness of sports-recreational facilities has been found to predict the level of participation in leisure-time physical activities, highlighting the importance of constructing beautiful, safe, and appropriately equipped facilities, as well as providing services such as buffet and parking (Abdi et al., 2014). Furthermore, it can be noted that customers using public facilities tend to have lower expectations for service quality compared to those using private facilities, who have higher demands for service delivery (Hill & Green, 2012). The installation of appropriate equipment, competent staff, and well-organised programmes at sports facilities have also been identified as contributing factors to customer's satisfaction (Günel & Duyan, 2020). Thus, Adiele and Morgan (2018) stressed on sports facility managers to periodically evaluate the quality of their facilities to ensure customer's safety and satisfaction.

Operational services, food and beverage services, programmes and event services, security services, and consumption services should be emphasised and enhanced (Pa et al., 2022). Individual features of sports facilities may not directly influence customer satisfaction, but collectively they contribute to overall satisfaction (Greenwell et al., 2002). Evidently too, the connection between facility service and the satisfaction of university athletes has been investigated, indicating that higher satisfaction with facility service leads to greater satisfaction among university athletes (Azram et al., 2023). Beyond sports environment, a broader outlook with research in casino environments, has shown that an appropriate physical environment significantly affects slot servicescape's satisfaction (Lucas, 2003; Mayer & Johnson, 2003).

The need to create effective and attractive sports centres through new design methods is of utmost importance (Kiani & Bahrami, 2020). In consideration of users who spend prolonged period while seating during events (Wakefield et al., 1996), the seating comfort

is regarded highly relevant, as part of servicescape's dimension, representing non-verbal communication between the user and the environment (Lam et al., 2011). Carev (2008) suggested that customer satisfaction can be improved by enhancing room comfort, amenities, and accessories. Similarly, Suki (2013) highlighted the significant impact of overall appearances on customer satisfaction. Marković and Janković (2013) noticed that the general appearance, equipment, and cleanliness of a facility positively affect overall satisfaction. These studies collectively emphasise the paramount role of the physical environment in determining customer satisfaction (Padlee et al., 2019a). Other studies explored the aesthetics and amenities of sports facilities which are linked to attendance rates, with inadequate stadium ambiance and amenities often attributed to poor attendance (Cannella, 1999 cited in Athanasopoulou et al., 2012). Therefore, visually apparent and controllable attributes of the servicescape in sports facility environments are considered valuable insights for design considerations (Manca & Fornara, 2014).

For majority of the studies in customer's satisfaction, employees' behaviours play a crucial role. Studies have shown that factors such as politeness, knowledgeability, and the ability to make customers feel special all contribute to overall satisfaction (Kuo & Hsiao, 2013; Türkay & Şengül, 2014 as cited in Padlee et al., 2019). It has been observed that when employees dress neatly, maintain good grooming, display enthusiasm for their work, they exhibit courteous and friendly behaviour towards users, hence, users' satisfaction tends to increase. This correlation between employee's behaviour and customer's satisfaction has been established to some extent. However, despite the efforts put into constructing and maintaining sports facilities, there are often challenges and issues in their management and operational control faced by facility managers (Mohamed et al., 2018).

These findings highlight the significance of the service environment in relation to customer's satisfaction. It spans across the physical environment in which services are delivered, including the design, layout, and overall ambiance of the facility. It is important to recognise that the service landscape not only includes the tangible aspects of the environment but also the intangible elements such as employee's behaviour which forms part of this research dimension.

2.6.1.1 Physical and Users' Satisfaction

As cited by Şahiner (2016) in Berens (1997)'s research, it was found that the orientation and density of furniture have a direct effect on how customers perceive the physical environment. To create a warm and friendly atmosphere in sports facilities, factors such as cleanliness and well-maintained equipment, are also highly valued by customers (Moura e Sá & Cunha, 2019). Findings by Yitbarek et al. (2017) showed that spectators have reported positive experiences regarding the allocation of space, cleanliness of the venue, and the services provided by facility employees. Overall, the physical environment exerts a profound influence on the consumption experience and generates excitement in leisure settings (Lam et al., 2011). Therefore, in order to effectively manage resources and maintain facilities, it is crucial for managers to take a proactive approach in assessing the condition of facility assets (Chandrashekar & Gopalakrishnan, 2008). This process, known as facility condition assessment (FCA), involves thoroughly examining all aspects of the facilities, including buildings, mechanical and electrical equipment, internal structures, finishes, and the building site (Chandler, 1995). Hence, it can be hypothesised that:

H1: Physical aspects of the facility are positively related to users' satisfaction.

2.6.1.2 Layout and Users' Satisfaction

In the specific context of sport facilities for leisure activities, the layout accessibility becomes even more critical to facilitate smooth movement and easy access for users. Customers need to navigate various areas of the servicescape, including seating areas, finding food and beverage or retail outlets, locating the lavatories, ticketing, parking areas, and entry or exit points (Lee, 2003). Whilst the layout of a facility has the ability to create a sense of privacy and acts as a boundary to limit users' mobility (Lin, 2004), an effectively planned facility layout facilitates convenient movement for users (Jang & Namkung, 2009; Tsaur et al., 2015). On the other hand, Rutes et al. (2001) suggested that planning and designing public areas should focus on clustering facilities around the lobby, making it easier for guests to locate them. An interesting and effective servicescape layout consequently, could also contribute to the fulfilment of customers' pleasure needs (Thapa, 2007). Additionally, research has shown that the internal layouts of buildings could either facilitate or restrict movement, thereby influencing the perception of crowding or spaciousness (Aubert-Gamet, 1997). Similarly to Filingeri et al. (2017)'s research, the configuration of a venue's layout, including the arrangement of spaces and facilities, the positioning of elements, the design of walkways, and the availability of space, has been recognised as a significant factor in shaping the crowd's experience

Overall, the layout accessibility of leisure service environments plays a significant role in shaping customers' experiences and satisfaction, as well as their ease of navigation within the facility. Proper design and arrangement of elements can enhance the overall service delivery and create a more enjoyable and functional environment for users. Thus, the suggested hypothesis is as follows:

H2: Layout is positively related to users' satisfaction.

2.6.1.3 Amenities and Users' Satisfaction

In urban design literature, the term "amenities" encompasses both measurable characteristics and the subjective aspects of the built environment (Elmubarak et al., 2023). It refers to a combination of tangible and intangible elements that contribute to individuals' and communities' valuations of their surroundings, including the sense of place, ambience, and physical amenities (Parker & Doak, 2012). When it comes to sports amenities provided by hotels, there is a wide variation depending on people's desires and expectations (Hietarinta, 2017). These amenities can range from well-equipped gyms and group exercise classes to swimming pools, golf courses, and tennis courts.

Dugalić and Krsteska (2013) provided a comprehensive understanding of sports facilities, which encompass various components catering to the needs of athletes, spectators, and staff. These facilities typically include multiple courts for training purposes, such as primary and auxiliary playing courts. Additionally, they feature accompanying facilities like changing rooms, storage rooms, medical rooms, administrative offices, gyms, saunas, solariums, and massage rooms. To promote relaxation, recreation, and studying, designated areas are provided within the facility. Adequate communication spaces, such as hallways, access points, passages, elevators, and parking areas, are also included. In terms of convenience, the authors further explained that sports facilities incorporate signalisation systems with general instructions and scoring panels, as well as other amenities such as sound systems and lavatories for users' comfort. It is worth noting that contemporary sports complex, such as stadiums and multifunctional indoor arenas, often integrate commercial or business spaces that are leased out to generate additional revenue (Dugalić & Krsteska,

2013). Additionally, the incorporation of commercial premises within modern sports facilities adds a financial aspect to their management and operation. The study of amenities' effects on users' satisfaction is imperative given the importance of this component in sports facility. Therefore, the hypothesis can be proposed as follows.

H3: Amenities are positively related to users' satisfaction.

2.6.1.4 Facility Aesthetics and Users' Satisfaction

The visual appeal and beauty of a space have a significant impact on attracting people and providing them with mental comfort (Naghizadeh, 2002), as this aspect becomes particularly important in sports venues, influencing people's decision to stop, walk around, and engage in collective activities. In the context of servicescape dimensions within the hotel lobby's environment, there are concerns in the study on design factors, specifically on aesthetics of the facility and layout accessibility (Şahiner, 2016). The study added that interior design within the building such as wall artwork, furniture, interior-scaping, colour and lightings all fall under the sub dimensions of facility aesthetics. In view of that, Thapa (2007) also found out that exquisitely designed interior-scaping tends to evoke positive customers' satisfaction and favourable overall evaluation of the visually attractive environment. Aesthetics factor, in designing sports facilities should not be belittled, considering the role of aesthetics dimension in sports places shows a positive relationships to attract people to do sporting activities (Alizadeh & Cobuliev, 2022). It is also acknowledged in You et al. (2023)'s study, aesthetics of sports venues has moderate effect on participation of physical activity. Regardless of any age groups, users would be more inclined to participate in sports or physical activities with modern and interesting design

features of public spaces, as well as catering to the needs of disabled people with ease of access to the facilities (Al-Taesh & Ujma-Wasowicz, 2023).

A research carried out by Biscaia et al. (2021) underscores the primary determinants of perceived value in spectator sports are functional and aesthetic quality, which had a minor impact on behavioural intentions and satisfaction but a moderate influence on perceived value. On the contrary, relationship between aesthetic variable and customer loyalty is deemed low in a swimming pool setting (Kiani et al., 2022). Other studies on leisure sports (Lee, 2003; Son et al., 2018) and competitive sports (Greenwell et al., 2002; Phonthanukitithaworn & Sellitto, 2018; OZRUDI, 2022) discovered aesthetics to be positive predictors of satisfaction. This implies the criteria of aesthetics does respond to users' satisfaction, and the study caters to the scenario from the perspective of local public sports facilities. Therefore, a hypothesis can be considered as follows.

H4: Facility aesthetics is positively related to users' satisfaction.

2.6.1.5 Service Quality and Users' Satisfaction

Service quality and customer satisfaction are particularly important in the sports service sector, as highlighted by Pool et al. (2016). Though some researchers use the terms interchangeably, both satisfaction and service quality are two distinct concepts that depend on one another (Toosi et al., 2014). Parasuraman et al. (1988) defined service quality as the extent to which customers' perceptions align with their expectations. Therefore, sports organisations have a responsibility to enhance service quality and ensure continuous customer satisfaction (Yuzgenc & Ozgul, 2014 cited in Günel & Duyan, 2020). From the sports and leisure context, service quality is considered a critical factor in acquiring and retaining customers (Howat & Assaker, 2013; Avourdiadou & Theodorakis, 2014).

Additionally, the presence of facilities is inherent in the provision of services (Khairi & Darmawan, 2021). Football clubs, in particular, place great importance in providing high-quality services as it reflects the performance of managers and contributes to the organisation's positioning, satisfaction, and behavioural intentions (Ko et al., 2011). To gain a competitive edge in the case of fitness clubs, it was identified critical service element of staff quality proves highly influential in satisfying consumers (Albayrak & Caber, 2014). Given that services are intangible-related, the interaction between customers and service providers is likely the most crucial aspect of a service. This is because the quality of the customer experience is directly influenced by the customer contact (Sauer et al., 2017). Verma (2011) divided service personnel into categories based on whether they had direct contact with customers or otherwise. He further highlighted that in the course of providing services, employee interactions with customers are likely to occur. From the study, he opined that stewards and retail salespeople are two examples of staff members who interact with customers in a sports setting. Employees who support the provision of services but do not interact with customers are referred to as non-customer-contact workers. Although they assist in the delivery of the product, back-end workers like electricians and kitchen assistants are not considered to be in direct contact with customers. Nevertheless, Tombs and McColl-Kennedy (2003) stated that the social component of the service encounter is extremely important as part of the servicescape. According to Bustamante and Rubio (2017), social components have a direct role in determining the experience through interactions between consumers and service personnel. The social service environment induces the consuming experience to elicit emotional and psychological reactions (Bustamante & Rubio, 2017). Therefore, service quality has been suggested to include interaction between users and employees in the context of sports (Theodorakis et al., 2013), whereas employee quality

indicates their attitude and behaviour towards the users (Wakefield et al., 1996; Theodorakis et al., 2001; Yoshida & James, 2010). A hypothesis is then designed as below, with the focus on the service quality in view of facility frontline employee's quality.

H5: Service quality is positively related to users' satisfaction.

Facility managers have a direct influence on the visitor experience, especially in terms of rendering the service quality dimensions that impact customer satisfaction (Zeithaml et al., 2009). However, it is crucial to acknowledge that different types of sport facilities may demonstrate differentiations of service quality levels, as highlighted by Hill and Green (2012). Therefore, the effects found for one service dimension in a particular type of facility may not necessarily apply to another.

2.6.1.6 Comfort and Users' Satisfaction

The buildings where people live need to provide optimum comfort conditions to ensure the highest level of comfort possible in order to promote healthy and productive living (Sezer & Erbil, 2016). International research on physical environment controls in healthcare facilities have revealed that certain of these studies look at thermal comfort levels and conditions (Skoog et al., 2005; Balaras et al., 2007; Hwang et al., 2007). Comfort is often associated with ambient conditions in the servicescape, involving background environmental conditions in which individuals' experiences are affected by one or more of the five senses. These include the air quality, surrounding temperature, noise, lighting, and scent (Bitner, 1992). The study of internal air quality and ventilation is another area of physical environment control that has a large body of research (Wang et al., 2006; Méndez et al., 2008; Rui et al., 2008), as well as technical services such as power supply, heating, and air conditioning installation (Van Schijndel, 2002; Renedo et al., 2006). Thus, creating climatic,

audial, and visual comfort conditions in buildings could increase satisfaction of their users (Sezer & Erbil, 2016). It is also expected that comfort has a more favourable impact upon customer emotional state (Greenland & Mcgoldrick, 2005).

Nevertheless, past research has indicated these factors (ambient conditions) are seen as challenging for management to control during sports events within the sports facility (Wakefield et al., 1996). Despite advancements in sports facility technology, control over ambient conditions often extends solely to indoor arenas or specific areas of the outdoor stadium, and are more suited to hospitality industry in this context (Yazawa, 2021). For the applicability and generalisation of the study area, ambient conditions, such as temperature and air quality, were deliberately excluded from the conceptualisation of service environment. Hence, this study emphasises on seating comfort, particularly in seating arrangements, necessitates the omission of ambient factors to ensure the relevance of the assessment scale and better evaluate comfort within sports facilities. According to Wakefield et al. (1996), seating comfort within the service environment involves both the physical attributes of the seat itself and the spatial arrangement between seats. Numerous empirical studies (Chang, 2000; Hill & Green, 2000; Höck et al., 2010; Yoshida & James, 2010) have consistently investigated the impact of seat comfort. This aspect incorporates evaluations of seat quality, assessing functionality and the overall condition of the seating (Wakefield et al., 1996; Wakefield & Blodgett, 2016). Additionally, seat comfort relates to factors like space for knees or elbows and the unobstructed view offered by the seat location (Yoshida & James, 2010).

Understanding the comfort of seating arrangements is a crucial factor that can affect customer satisfaction. For instance, customers in a leisure setting who are required to sit for long periods of time may feel uncomfortable if the seats are too close to each other or if the

quality of the seats is poor (Wakefield & Blodgett, 1996a). Lee (2003) argued that most leisure seekers desire to seek out comfortable environments where they can relax, unwind and enjoy their leisure time. In many cases this means they often find opportunities to relax and rejuvenate in leisure-sport areas, such as stadiums, jogging tracks and fields where they can relish hours of exhilarating experiences. Essentially too, sports fans may be engaged actively throughout an event and expect comfortable seats from sporting facilities, making it necessary for sports operators to build or renovate facilities effectively and expeditiously (King, 1999 cited in Athanasopoulou et al., 2012). As such, numerous facilities have been constructed with a strong emphasis on providing comfort and excellent amenities (Greenwell et al., 2002). They added that builders or architects of newer facilities, however, have proactively addressed concerns related to fan seating comfort. Primarily, one of the basic needs of humans is that indoor spaces should have the right physical attributes to enable people to perform their tasks with comfort (Roelofsen, 2002). Following that, Shafie et al. (2023) have also explained the aspect of seating comfort as influencing demand for consumers to be satisfied in a commercial sports venue. In this study, the sporting settings would concentrate on the seat comfort of users during their stay at the facilities. Hence, a hypothesis of the study can be developed as:

H6: Comfort is positively related to users' satisfaction.

2.6.1.7 Safety and Users' Satisfaction

The disregard for the health and safety of users and employees is one of the major drawbacks of sports facilities and complexes (Ekmekçi & Pamukkale, 2022). It is imperative to take into account how people view their physical surroundings since opinions about safety and attractiveness have a big influence on people's decision to participate in sports

(Beenackers et al., 2011). Jeon and Kim (2012) gained insights into how perceptions of safety factors (e.g., safety signs, fire equipment, hazard detectors, and antiskid tools) exert a significant effect on fostering positive emotions among individuals at airports. It was identified that safety and security are essential variables that projects a strong positive relationship with customer's satisfaction (Mat et al., 2018). Elements such as safety and crime rates, along with the availability of sports facilities, can impact sports participation (Deelen et al., 2016).

Furthermore, Lai and Yik (2011) explored the components of the ideal maintenance configuration that will offer high users' satisfaction, safety, and efficiency to the building's occupants. In reference to past studies, security is one of the service qualities dimensions and play an important role in the public transport among users (Mat et al., 2018), whereby satisfaction subsequently leads to loyalty (Chan et al., 2021). In a survey conducted by Peckover et al. (2022), the safety and satisfaction of attendees at the running events are severely impacted by runner's congestion, emphasising the need on establishing regulations to handle congestion more effectively. On top of that, football fans experience a greater sense of safety when they find the stadium aesthetically pleasing and when their access to, and exit from the venue are comfortable (Manca & Fornara, 2014).

According to Kim et al. (2020), consumer satisfaction in terms of sports facility utilisation is directly related with efficient risk management practises. A well-structured risk management system provides users with a sense of security and trust, which impacts their perceptions of the facility (Kim et al., 2020). Aznan et al. (2023) even implied that individuals are more satisfied when they believe their safety is of the utmost importance and that possible hazards have been identified and addressed. They concurred the positive belief extends across several aspects, including equipment quality, sufficiency of safety measures,

personnel competency, and overall facility atmosphere. Ultimately, this presents an area of importance which can be extended to a more confined sporting environment, specifically on empirical understanding of how satisfaction is tied to safety factor in terms of protection measures available in the public sports facilities in Sarawak. It can be hypothesised that:

H7: Safety is positively related to users' satisfaction.

2.6.1.8 Relationships between Users' Satisfaction, Loyalty, and Reuse Intention in Sports Facilities

In majority of the literatures, satisfaction is the mainstay link in driving loyalty, while both are becoming predictors of retaining user's intention to reuse a product or service, resulting in organisations to shift their focus in building a strong connection with users to foster loyalty and encourage repeat usage of the services offered. Camilleri and Filieri (2023)'s assessment of consumer's satisfaction and loyalty with online review show direct and indirect effects of predicting users' satisfaction and loyalty with online review sites. Studies in the tourism industry also suggested satisfaction affects loyalty and revisit intention (Han et al., 2021; Wani et al., 2023), as Jalilvand et al. (2014) opined that tourists' satisfaction had a positive and significant effect on the level of their loyalty. From the aspect of healthcare industry, Lacap (2022) studied the satisfaction of patients towards physical environment and came to know that their satisfactory levels positively affect loyalty, and intention to recommend.

The evaluation of service quality dimensions in the provision and delivery of sport or recreation pursuits has been found to impact participation (Mackay & Crompton, 1988). Research has indicated that the satisfaction of consumers shows a positive determinant in determining their loyalty towards a particular product or service (Cronin et al., 2000). In the

context of university-based sports services, student's satisfaction with the services provided by a sports management organisation can create a favourable impression of the organisation, indicating its ability to understand and meet the needs of students (Rahman et al., 2021). Notably, athlete's satisfaction is directly influenced by the quality of sports services provided (Taat et al., 2021), which in turn encourages customer's loyalty and facility usage (Schijns et al., 2016). As organisations increasingly placing emphasis in evaluating service quality to strategically assess the overall performance of facilities, it helps optimise facility design and management efficiency based on users' perceived performance (Lau et al., 2021). Realising that technical performance indicators alone may not be sufficient for capturing a building's holistic performance, researchers have shifted towards a behavioural approach for building evaluation (Roberts et al., 2019).

García-Fernández et al. (2014) acknowledged the challenge of attaining customer satisfaction and loyalty, due to the highly competitive nature of the sports business environment (Jasinskas et al., 2013; Lim et al., 2016). Research has also been conducted on the efficacy of both indoor and outdoor aquatic centres (Howat et al., 2005). Another study by Howat et al. (2008) focused on the implications of staffing, relaxation amenities, and facility presentation on overall users' satisfaction. Additionally, Howat and Assaker (2013) investigated the effects of perceived quality on perceived value, satisfaction, and loyalty. Similarly, Moura e Sá and Cunha (2019) investigated the drivers of satisfaction and loyalty in swimming pool centres and results showed positive word-of-mouth communication and psychological commitment are substantially correlated with satisfaction. The same goes in Afthinos et al. (2017)'s findings, gauging the perception of satisfaction and loyalty indicates strong relationship among them. Hence, it is hypothesised that:

H8: Users' satisfaction is positively related to loyalty.

Moreover, findings from Murray and Howat (2002) have proven that customer's satisfaction significantly influences their intentions for future behaviour. When assessing service quality and customer's satisfaction, several elements come into play, including employee's behaviour, the physical appearance of the facility, and the quality of food (Padlee et al., 2019a). The overall appearance and cleanliness of the facility, as well as the comfort and attractiveness of the rooms, significantly impact customer satisfaction and their willingness to recommend the facility to others (Zhang et al., 2011; Dortyol et al., 2014). In line with the summary provided by (Howat & Crilley, 2007), customers in public aquatic centres who are satisfied are more inclined to increase their utilisation of a service and recommend it to others, thereby making customer retention highly profitable and an effective strategy for acquiring new customers.

Looking into the elderly users with neighbourhood sports facilities, the satisfaction can be considered a significant factor that strongly impacts their intention to reuse the facilities in the future, as revealed in Cho et al. (2022)'s study. Besides, satisfaction among users at sports centres correlates positively with their intention to return and demonstrate high loyalty, with factors such as facility quality, customer service, and the variety of available sports activities significantly influence these outcomes (Tsitskari et al., 2014). Visitors who return to a particular location are likely to experience higher levels of satisfaction, stay for longer durations, engage more actively in activities at the destination and, also contribute to positive word-of-mouth promotion, resulting in lower marketing costs, compared to first-time visitors (Lehto et al., 2004; Um et al., 2006). As observed by Pilus and Hussin (2013) in their study, spectator's loyalty has high correlation towards spectators' attendance at stadium, indicating that loyalty could enhance spectator's frequency to come to the stadium for more matches in the future. Therefore, both team

performance and the perception of the physical facility by fans impact their satisfaction levels. Another research findings by Brown et al. (2016) indicated that both sports involvement and place attachment have implications on revisit intentions. However, in the same study, this was not found to be the case for event satisfaction among attendees of the 2012 Olympic Games. From the football sports perspective, the physical environment of the stadium significantly impacts spectators' satisfaction, as a positive and enjoyable experience at the facility encourages their return for future events (Yusof & Lee, 2008).

Though in the past studies, the term “customer’s satisfaction” and “spectator’s satisfaction” have been widely used to examine satisfaction levels of individuals who have purchased a product or service, nevertheless, in this research, the focus is on users’ satisfaction, which concerns to the satisfaction of those who have experienced using the public sports facilities. According to the findings of Rowley (2000), customers are the general recipients of goods or services, while users are a specific group within the customer base who directly interact with and utilise the provided services. In line with earlier researches, Reza et al. (2008) and Lee (2017) found users who are highly satisfied with sports facilities are also highly likely to reuse those facilities and to recommend them to others. This is supported by another study, whereby satisfaction also demonstrated a significant impact on reuse intention (Cho et al., 2022a). According to Zeithaml et al. (1996), customer loyalty refers to a customer's willingness to remain with their current service provider. This is supported in Alexandris and James (2003)’s study, as customer loyalty is closely linked to participant retention at sports facilities. In the context of sporting events, since building a positive destination image can ultimately lead to destination loyalty, sporting events offer opportunities to enhance the destination's image, promote local products, foster local patriotism, and create employment (Jeeyoon et al., 2014). Therefore, it is not only important

for sports facilities to attract new customers but also to retain those who currently utilise the facility (Hill & Green, 2012).

Spectators' satisfaction with the sportscape has been found to correlate with their intention to spend more time at the stadium and return for future games (Wakefield et al., 1996). In another study, Yang et al. (2008) discovered a relationship between commitment and the intention to use fitness and health centre facilities. The availability of stadium facilities, as well as fitness and health centre amenities, influences the interest of spectators or club members. Rozita et al. (2014) highlighted that the provision of excellent services and facilities lead to satisfaction and behavioural intentions among existing customers. Moreover, Pilus et al. (2010) found that loyalty, as perceived by spectators, can enhance their frequency of attending matches at the stadium in the future. It can also be noted in Zhou et al. (2020)'s study, that satisfied customers are likely to develop loyalty towards the service provider, which can result in repeat visits and increased revenue. To strengthen the bond with spectators and boost their inclination to attend future games, clubs must strive to provide a lasting impression and memorable experiences at the stadium (Yoshida et al., 2013). Hence, the following can be hypothesised in consideration of previous elaborations on loyalty, and reuse intention reviews of the constructs.

H9: Loyalty is positively related to reuse intention.

2.7 Summary

The literature review in this chapter evaluates the research landscape related to the effects of the service environment on users' satisfaction, loyalty, and reuse intention from the context of public sports facilities. The existing body of knowledge underlines the relevant theories, its applicability in integrating the concept of users' satisfaction as a crucial outcome

quality that could significantly impact the future behaviours of users. Subsequently, it also fosters their loyalty and drives the intention to reuse a service or facility. In addition, grasping the rationality of the research via range of constructs and concepts of the complex relationship is explained in this chapter. Moving on, the subsequent chapter will detail out research methods, collection of data processes and the approach used for the data analysis for this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The research methods and design utilised to conduct this research study are described in this chapter. In the beginning, this study set out to comprehend the essence of environmental factors for the public sports facilities in Sarawak. To recap, the literature review analysis served as the basis for the research methodology, design, and questions developments. Follow up to Chapter Two, this chapter presented a detailed overview of the research methodology employed to investigate the effects of the sport service environment on users' satisfaction, loyalty, and reuse intention in public sports facilities across Sarawak. The methodological framework was designed to address the research questions and objectives, providing a comprehensive understanding of the factors influencing users' experiences in public sports facilities. Firstly, this chapter began by describing the research design, the data population and its sampling selection. It then followed up with the research sites identified for the study to take place. Lastly, it gave a clear idea on the data gathering method and concluded with the data validation and reliability processes.

3.2 Research Design

A correlational design was employed to conduct the study. This approach enabled the assessment of the degree of association among variables (Thomas & Zubkov, 2023), aligning well with the research objectives. For the purpose of streamlining data collection and analysis in light of practical consideration of the research process, this study employed a quantitative approach to explore the relationships between the sports service environment and crucial users' outcomes in Sarawak's public sports facilities, regardless of the specific

facility type. Quantitative research enables learning more about a population's demographics, determine how many customers utilise a service or product, assess attitudes and behaviours, document trends or describe what is accepted by personal experience (Goertzen, 2017). The research cross-sectional approach, which collected data at a particular period, provided a full overview of users' perceptions, satisfaction, loyalty, and intent to reuse. This approach was aimed at identifying direct links between the quality of the sports service environment, satisfaction, and the behavioural reactions of facility users. An overview of the research design flowchart can be viewed in Figure 3.1.

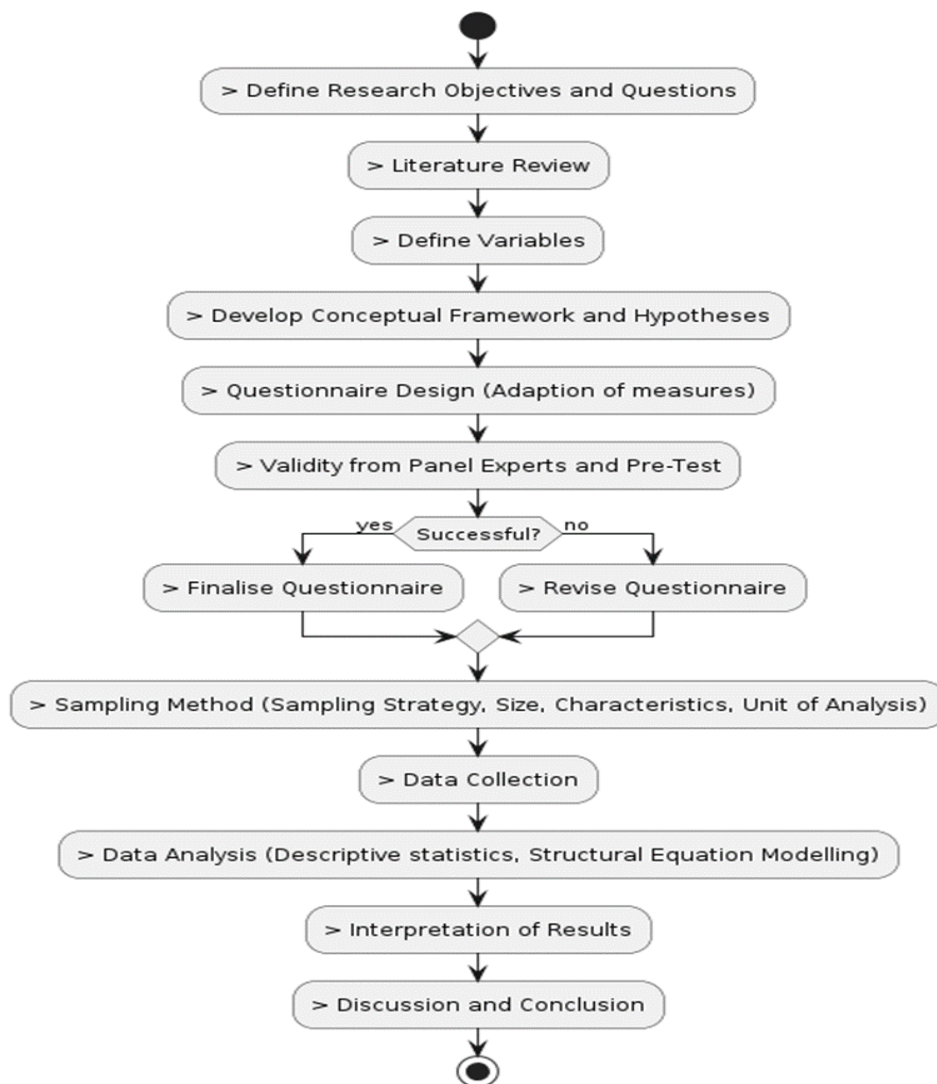


Figure 3.1: Research Design Flowchart

3.2.1 Instruments

This empirical study involved gathering of primary data by means of survey using a structured questionnaire. In the case of questionnaire-based surveys, respondents were required to read the questions carefully and fully comprehend them before answering. Typically, it used closed-ended multiple-choice questions.

Within this study, the online survey questionnaire was segmented into three specific sections (as in Appendix A). Before doing the survey, a brief introduction of the purpose of the research and an assurance of anonymity, was given at the start of the survey. Moreover, respondents were advised that they had the option to withdraw at any time and for any reason. The initial Section A consisted of the demographic profile of the respondents such as age, gender, level of education, and their current employment status. In the following Section B, a general information pertaining respondents' types of sports facilities used and the recent usage of the sports facilities were observed. Next, Section C comprised of the respondents' perceptions as to what extent of agreement level they had experienced on multiple service environment dimensions, the level of agreement on users' satisfaction, user's loyalty, and reuse intention of the sports service provider in Sarawak.

Each item for service environment dimensions; physical, layout, facility aesthetics, amenities, service quality, comfort, safety, satisfaction, loyalty, and reuse intention, was measured on a Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). This was consistent with previous research (Jeon et al., 2021; Tanner, 2021; Liu et al., 2022; Quansah, 2022; Huang & Kim, 2023), using similar scales for measuring service attributes.

3.2.2 Measures

This study's measurement items had been adapted and modified from previous researches to assess this study's constructs, whereby minor refining of the items was done to suit the research objectives and questions of this study accordingly. To test the research hypotheses, the instrument was consisted of several constructs designed to measure the independent and dependent variables of interest. In the first stage of the analysis, the independent variables under the dimension of sports service environment referred to the perceptions of the physical facility, layout, facility aesthetics, amenities, service quality, comfort, and safety, whereas the dependent variable investigated was users' satisfaction. Then, it was also important to analyse the relationships between variables of users' satisfaction, loyalty, and reuse intention.

3.2.2.1 Section A: Demographic Information

This initial section of the questionnaire captured the demographic detail of the respondent (user). Demographic questions were included in a survey since they allowed for the classification and measurement of users of varied gender, age, educational level, and job status into groups. This categorisation, based on similar attributes, was then used for statistical examination and research analysis.

3.2.2.2 Section B: General Information

The second section required respondents to provide general information about the sports facilities they utilised. This section has two segments of questions, focusing on the types of sports facility and regularity in which respondents attended or utilised the sports facility. This information provided an understanding of users' habits and preferences in their interactions with the sports facility.

3.2.2.3 Section C: Relationship between Service Environment's Elements, Satisfaction, Loyalty and Reuse Intention

Overall, there were initially 37 items from seven dimensions under service environment, six items under satisfaction, five items under loyalty and four items under reuse intention were applied for the study. In the first part, the relationship between service environment constructs and satisfaction questionnaires with regards to respondents' experiences prior to using the public sports facilities in Sarawak composed of five items related to physical condition, four items related to layout, six items related to amenities services, and eight items related to aesthetic experiences. On top of that, intangible constructs consisted of five items related to service quality of the facility, five items related to comfort and four items related to safety services. A Likert scale is a type of psychometric measure where respondents can select from a variety of categories to express thoughts, attitudes, or feelings regarding a particular subject (Nemoto & Beglar, 2014). Seven Likert-type scales were utilised to address the questions in Section C to determine the extent of responses with more choices of numerical equivalent and interpretation; 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = agree, and 7 = strongly agree. The main purpose of adopting a scale with an odd number of categories was having a mid-point which allowed respondents to report neutrality. Forcing respondents to select a side on an equal scale can greatly distort the result because genuinely neutral people would be forced to pick a category that did not accurately represent what they believed (Stieger et al., 2007; Saw et al., 2020).

The questionnaires items employed in this study had undergone careful adaptation and modification from a validated instrument utilised in previous research studies. The purpose of these modifications was to tailor the questionnaire to the specific context and

objectives of the current investigation, ensuring relevance and appropriateness for the target population. A tabulated summary for the items can be viewed in Table 3.1.

Table 3.1: Adaptation and Modification of Questionnaires' Items

Constructs	No	Original Item	Adapted Item	Original Authors
Physical	1	The hotel carries out regular maintenance of the hotel lawn and green spaces.	The sports facility carries out regular maintenance of the surrounding lawn and green spaces.	Padlee et al. (2019)
	2	The hotel buildings and layout are visually pleasing	The sports buildings and layout are visually pleasing.	
	3	The hotel has sufficient and comfortable space.	The sports facility has sufficient and comfortable space.	
	4	The furniture in the hotel is modern and comfortable.	The furniture in the sports facility is modern and comfortable.	
	5	The hotel is clean.	The sports facility is clean.	
Layout	1	Overall, the [stadium's/arena's] layout makes it easy to get where you want to go.	Overall, the sports facility's layout makes it easy to get where you want to go.	Yazawa (2021)
	2	[Stadium/Arena] has sufficient space to handle crowds.	The sports facility has sufficient space to handle crowds.	
	3	Signs at the [stadium/arena] help me know where I'm going.	Signs at the sports facility help me know where I am going.	
	4	Signs at the [stadium/arena] give clear directions of where things are located	Signs at the sports facility give clear directions of where things are located	
Amenities	1	A sufficient trash for each type	Availability of sufficient trash bins	Agustinawati and Yusuf (2019)
	2	A large parking safe	A large parking area	
	3	Canteens clean and comfortable	Food and beverage provider is clean and comfortable	
	4	Toilets clean and comfortable	Toilets are clean and comfortable	

Table 3.1 continued

	5	The facilities are well-maintained	The sports facilities are well-maintained	
	6	Facilities for prayer	Prayer room is available	
Facility Aesthetics	1	The [stadium's/arena's] architecture gives it an attractive character.	The sports facility's architecture gives it an attractive character.	Yazawa (2021)
	2	The landscape of the [stadium/arena] is visually pleasing.	The landscape of the sports facility is visually pleasing.	
	3	[Stadium/Arena] has unique features that I do not see in other places.	The sports facility has unique features that I do not see in other places.	
	4	[Stadium/Arena] is painted in attractive colours.	The sports facility is painted in attractive colours.	
	5	[Stadium/Arena] is decorated in an attractive fashion.	The sports facility is decorated in an attractive fashion.	
	6	This is an attractive [stadium/arena].	This is an attractive sports facility.	
	7	The interior of the [stadium/arena] is aesthetically appealing.	The interior of the sports facility is aesthetically appealing.	
	8	Decorations in the [stadium/arena] are very enjoyable.	Decorations in the sports facility are very enjoyable.	
Service Quality	1	Employees at this stadium demonstrate their willingness to help attendees.	Employees at this sports facility demonstrate their willingness to help attendees.	Yu (2015)
	2	The employees at this stadium respond quickly to your needs.	The employees at this sports facility respond quickly to your needs.	
	3	The stadium employees understand that you rely on their professional knowledge.	The sports facility's employees understand that you rely on their professional knowledge.	
	4	You can rely on the stadium employees taking actions to address your needs.	You can rely on the sports facility's employees in taking actions to address your needs.	
	5	You can rely on the employees at this stadium being friendly.	You can rely on the friendliness of employees at this sports facility.	

Table 3.1 continued

Comfort	1	There is plenty of knee room in the seats	There is plenty of knee room in the seats	Yazawa (2021)
	2	There is plenty of elbow room in the seats.	There is plenty of elbow room in the seats.	
	3	[Stadium/Arena] provides comfortable seats	The sports facility provides comfortable seats	
	4	It is easy to get around people between seats	It is easy to get around people between seats	
	5	Seats have an unobstructed sightline to watch the game	Seats have an unobstructed sightline to watch the game	
Safety	1	Emergency equipment for fire safety (e.g., fire sprinkler, extinguisher, emergency lighting, etc.) is installed to protect you	Emergency equipment for fire safety (e.g., fire sprinkler, extinguisher, emergency lighting, etc.) is installed to protect you	Kim (2021)
	2	Emergency / Safety signs are installed	Emergency / Safety signs are installed	
	3	Hazard detectors are installed	Hazard detectors are installed	
	4	Anti-skid tools are installed	Antiskid/ anti-slip tools are installed	
Satisfaction	1	I was very impressed with the facilities provided by ETS	I was very impressed with the facilities provided by Sarawak Sports Corporation	Kang et al. (2022)
	2	I will be more involved with ETS if they implement less carbon and heat emitting services	I will be more involved with Sarawak Sports Corporation if they implement less carbon and heat emitting services	
	3	I will recommend ETS services to our family and friends	I will recommend Sarawak Sports Corporation services to our family and friends	
	4	I will increase the frequency of ETS use	I will increase the frequency of Sarawak Sports Corporation's use	
	5	If ETS implements new facilities, I am willing to try and give advice	If Sarawak Sports Corporation implements new facilities, I am willing to try and give advice	

Table 3.1 continued

	6	I prefer ETS train rather than KTM train.	I prefer Sarawak Sports Corporation rather than other service provider.	
Loyalty	1	I will use this duty-free shop again if the opportunity arises.	I will use this sports facility again if the opportunity arises.	Park and Park (2018)
	2	I will revisit this duty-free shop as the product prices are appropriate.	I will revisit this sports facility as the prices are appropriate.	
	3	I will revisit this duty-free shop as the quality of the products is excellent.	I will revisit this sports facility as the quality of the service is excellent.	
	4	I will recommend this duty-free shop to others looking to use a duty-free shop.	I will recommend this sports facility to others looking to use a sports facility.	
	5	I will comment positively on this duty-free shop to other people.	I will recommend positively on this sports facility to other people.	
Reuse Intention	1	I want to continue exercising at the facility.	I want to continue exercising at the sports facility.	Cho et al. (2022)
	2	When considering exercise, I think of the facility first.	When considering exercise, I think of the sports facility first.	
	3	I want to go back to the facility and exercise.	I want to go back to the sports facility and exercise.	
	4	I want to actively participate in exercise at the facility.	I want to actively participate in exercise at the sports facility.	

i. Physical

This construct has five measurable items which had been adapted from Padlee et al. (2019) in their study of customer's satisfaction in the hotel industry. The reliability obtained was 0.703, which was adequate and suitable as a survey instrument (Hair et al., 2006). Previously, the scale was also used in other hospitality studies (Dortyol et al., 2014; Gunarathne, 2014). In view of the sports industry, the items had been modified to suit the sports facility environment, altering the theme from 'hotel' to 'sports facility'.

ii. Layout and Facility Aesthetics

Both constructs (Cronbach's Alpha values for layout = 0.82 and facility aesthetics = 0.90) from Yazawa (2021) questionnaires were reliable in this study and adapted with a minor rewording of 'stadium/ arena' to 'sports facility' to ensure relevance with the study's focus. The adapted items were relevant and applicable to this study in consideration of the sports facility context because they associated closely with the specific objectives and dimension being investigated in the research. Hence, there were four items under layout and eight items under facility aesthetics employed in this study.

iii. Amenities

The original instrument consisted of 15 items designed and originated from Agustinawati and Yusuf (2019) to measure construct related to amenities. It utilised a Likert scale from one (strongly disagree) to five (strongly agree) for participants to indicate their responses. To align the instrument with the common amenities available in the sports facility of this study, a systematic adaptation process was undertaken to adapt six of the items. While one of the items was adopted, the other items; 'A sufficient trash for each type' and 'Facilities for prayer' were modified as 'Availability of sufficient trash bins' and 'Prayer room is available' for the purpose of this survey. For item 3, 'canteen' had been altered to 'food and beverage provider' to suit the sporting events or activities for service offered at the sports facility. Moreover, for item 5, 'sports' was added in front of 'facilities' to reflect the nature of the study in the sports industry, hence the item stood as 'The sports facilities are well-maintained'.

iv. Service Quality

By reviewing Yu (2015)'s research consisting of five items on service quality impact on satisfaction in the university stadium, the applicability of the items was aligned with this study except for the wording 'stadium', which was altered to 'sports facility' to generalise the facility types based on indoor and outdoor stadium in this study. In his study, the Cronbach's alpha score was higher than 0.70, at 0.921 making the questionnaire highly reliable.

v. Comfort

Yazawa (2021) revised the scales to measure the comfort of seating at stadium and arena, which was aimed to evaluate the perceived quality. By comparing past literatures on seating comfort and conduct screening with subject expert in the sports setting, Yazawa (2021) finalised five different aspects of the seating arrangement. Cronbach's Alpha was calculated to examine internal consistency of the construct and obtained acceptable value of 0.72. For the present study, the scale of measuring comfort was adopted in order to quantitatively measure the subject's perceptions. In this study, this questionnaire adopted those five items.

vi. Safety

The safety questionnaire adopted items of safety measurements to the present study, from Kim (2021) which was used as part of the measurement of sports venue quality. Cronbach's alpha value obtained for the factor was greater than 0.70, at 0.919 that indicated the construct for safety were internally consistent and reliable. The questionnaire consisted of four items, whereby items 1 to 3 were adopted and item 4 included 'anti-slip' component in the item as a better fit to the sports facility study environment.

vii. Satisfaction

Satisfaction focuses on users' positive experiences prior to using various components of the essential sports facilities, including physical, layout, amenities, facility aesthetics, service quality, comfort and safety. The level of agreement for satisfaction was based on how well users experienced during their encounters with the respective sports environments. From an experiential perspective, Cole and Illum (2006) differentiated "experience quality," which reflects satisfaction at the transaction level, from "service quality," which refers to the specific attributes of the service itself.

Perceptions of satisfaction were measured using Kang et al. (2022)'s six-items satisfaction scale. Cronbach's Alpha for the variable users' satisfaction was 0.785, suggesting a high reliability. Items were worded to apply to users of the sports facility, specifically modifying the word 'ETS' to 'Sarawak Sports Corporation' in reference to the management of the study's facility. This scale was preferred because it reflected research findings in both the services marketing literature and the sport management literature.

viii. Loyalty

Loyalty on the other hand, reflects users' emotional or feeling, their state of confidence and trust of the sports facility if the users are satisfied with the elements of sports environment. This emotional connection is crucial for building loyalty, as Pullman and Gross (2004) found that creating such a bond during the customer's experience strengthens their commitment level. Expanding on this, Addis and Holbrook (2001) highlighted the importance of considering the "explosion of subjectivity," emphasising the deep emotional involvement consumers develop through their interactions with products or services.

Loyalty of the users was measured by five items adapted and modified slightly from Park and Park (2018)'s study on the servicescape impacts towards emotional response and

loyalty in an airport retail shop. The construct had a high reliability of Cronbach's Alpha value at 0.948. Adjustment of the term 'duty free shop' for each item was replaced with 'sports facility' to meet the context of this study and item 5 "comment" had been changed to "recommend", implying constructive feedback with regards to loyalty factor.

ix. Reuse Intention

As for reuse intention, the behaviour outcome or actionable responses driven by loyalty was investigated in the study to assess if the sense of emotional attachment with the sports facility could influence effectively their commitment and intention to reuse the sports facilities. In consumer behaviour research, a strong sense of emotional attachment is found to have a significant positive impact on repurchase intention (Curtis et al., 2011). Furthermore, as reuse intention is closely linked to business growth through customer loyalty, it is frequently used as a key measure of success (Rosell & Allen, 2020).

Items used to measure reuse intention were taken from Cho et al. (2022)'s reuse intention scale. The Cronbach's alpha value of the construct was 0.890, indicating the items were reliable. Four items were used that referred to the cognitive elements of reuse intention. By adding 'sports' in front of 'facility' provides specificity, clarifying any doubts that the facility was related to sports services. This scale was preferred as it had been found to be valid with content validity index of, $I-CVI > 0.78$, which was considered excellent (Polit & Beck, 2006).

3.2.3 Validity by Panel of Experts (PE)

To test the validity, the questionnaire's content was evaluated by a pool of experts to determine that all variables that needed to be assessed were reviewed. Additionally, pretesting had been done to ensure that the questionnaire addressed the degree of fairness

and accuracy. Based on Elangovan and Sundaravel (2021), by employing previous validated questionnaire can help assure the instrument's quality. Though the psychometric properties of this scale were confirmed in previous studies in the sports centres and other contexts, the content validity was determined by experts.

As the scales utilised in this study had previously been used, the panel of experts reviewed only the items involving minimal rewording throughout the question design process. A panel of one doctorate from the field (PE1) and two sports professionals (PE2 and PE3 with practical experiences for more than five years) vetted the new scale elements of the questionnaire regarding its descriptions, concepts, meanings, and application value. The choice of using only three experts remained consistent with a study by Foroughi et al. (2014) on impact of event quality on fan satisfaction, whereby the instrument's content-based validity was originally validated by submitting it to three experts, including faculty members from sports management courses. The expert panel was asked for their opinion if the items represented an appropriate domain and whether the format was conducive to achieving the intended findings. PE2 commented on the “facility aesthetics” construct item 8 which was identical to item 5. On the other hand, PE3 argued that item 2 in the “satisfaction” construct might not be relevant in the context of Sarawak at this period due to the lack of environmental and sustainability awareness among users. As such, both items 8 and 2 were omitted in the questionnaire. Other items were maintained with all three of the panel experts agreed on them. The revised questionnaire was then refined and pre-tested by a representative sample. This is discussed in the following section.

3.2.4 Pre-Test

According to Fowler (1995), the questionnaire's structure has a strong influence on the survey's results, which should be able to capture the true variations in respondents'

attitudes and views. On the other hand, a badly designed questionnaire may skew the answers, producing inaccurate and misleading data (Brace, 2008). A pre-testing survey was conducted to identify any problems or concerns with incorrect terminology, improper sequence, mistakes in question phrasing, layout, instructions, and other issues that may prevent respondents from answering specific questions (Ikart, 2018). As most of the questions were previously employed in the Western studies, conducting a pre-test locally could validate if the questionnaires were clear and understandable in the local environment.

The target respondents for this purpose were selected from Kuching and Miri to resemble the sample. Four participants came from Kuching and one from Miri, who have been using the facilities frequently for more than three years and have substantial knowledge of the facilities were engaged. Similar to a study by Ai et al. (2022), pre-testing was conducted with five respondents who are experts in the healthcare services before data collection. The initial questionnaire was distributed to them in November 2023 in person and briefly explained on the objective of pre-testing. Clear instruction was relayed to the participants to review the accuracy of the wording, clarity of the question and overall comprehension of the questions based on their experiences. Once they had examined the questionnaire, the participants were required to provide their feedbacks on the questions which necessitated improvement. During the process of reviewing the questions, the researcher also observed the participants behavioural patterns for any uncertainty and duration of time it took to complete the question. Results of the questionnaire's pre-testing can be viewed in Table 3.2. In addition, the time taken to complete the questionnaire was recorded and on average respondents took approximately between 8 to 12 minutes. All the respondents understood the remaining questions and found the revised questions clear and

easy. Upon finalising the questionnaires with the supervisor, the questionnaires (as in Appendix) can then be used for data collection.

Table 3.2: Results of Questionnaire's Pre-testing

Question / Item No	Original Question	Respondent (R)					Questions Amended
		R1	R2	R3	R4	R5	
1/1	The sports facility carries out regular maintenance of the surrounding lawn and green spaces.	-	Not sure about the regularity of maintenance	To use simpler words to replace lawn and green	-	-	The sports facility outdoor surrounding areas and grass are well-maintained
6/1	There is plenty of knee room in the seats	Unsure	-	-	Do not understand	What is this referring to?	There is enough knee space between the seats
6/2	There is plenty of elbow room in the seats.	Unsure	-	-	Do not understand	What is this referring to?	There is enough elbow space between the seats
7/4	Anti-skid/ anti-slip tools are installed	-	What is anti-skid?	Not sure what is anti-skid	-	Can you explain about anti-skid?	Anti-slip flooring tools are installed

3.3 Research Sites

The areas of the research were located in Sarawak, Malaysia. In various districts across Sarawak, the sports facilities were selected and justified based on its popularity among patrons who had booked and organised for usage such as events, games, tournaments, training, and competition within the urban districts. Most of the public sports facilities in Sarawak are placed under SSC's responsibilities, due to their expertise in managing sports athletes and facility development.

Since SSC has been progressing tremendously in driving the sports development in recent years, there are 55 public sports facilities to date, that fall under SSC's care. Extensive coverage of 55 sports facilities throughout Sarawak was overwhelming to manage independently, therefore, additional exclusion criteria was introduced. With this in mind, frequently used facilities in prime urban areas were shortlisted after receiving feedbacks from SSC's corporate and technical management team. To narrow down the selection, indoor stadium (i.e., lawn bowl arena and swimming pool) and outdoor stadiums (i.e., field and track) in the main urban districts had been identified as highly reliable for this study. Therefore, five sports facilities in Kuching, one each in Sibul, Bintulu and Miri respectively were targeted. By diversifying multiple sports facilities in Sarawak, a sample representation from various geographical locations would enhance the generalisability of the findings and help identify regional trends and patterns. Statistics from DOSM (2022) also revealed population in these four districts were high (as shown in Table 3.3). This allowed for more potential participants to take part in the survey since many had experienced and utilised the sports facilities first hand. Furthermore, an overview of the regional public sports facilities in Sarawak to be studied can be illustrated in the layout (Figure 3.2).

construct, formally opened to users on August 20, 1988 (SSC, 2023a). Able to house approximately 4,525 spectators, the stadium is more than just a place to play, but also it is a representation of Sarawak's rich athletic history. Figure 3.3 depicts the current sports venue of Indoor Stadium at Petra Jaya.

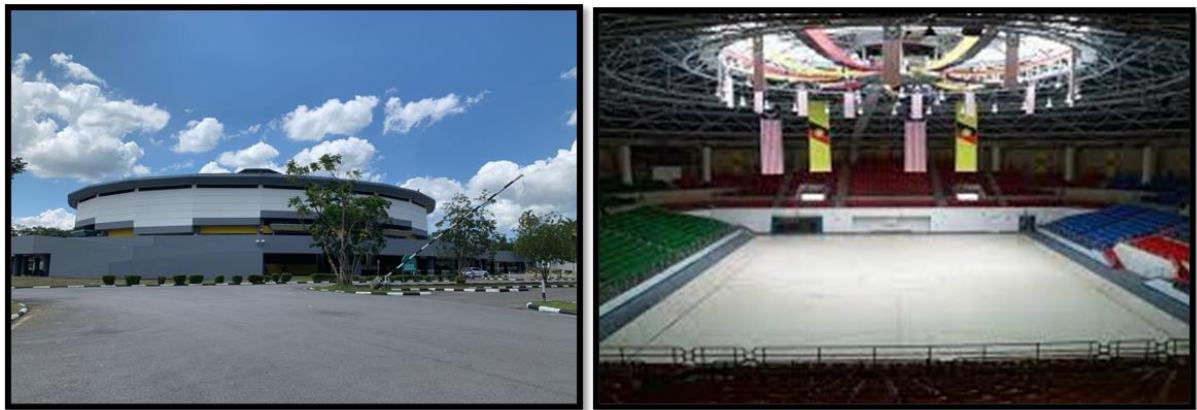


Figure 3.3: Indoor Stadium, Petra Jaya, Kuching

The arena's main section measures an amazing 33.6 by 46.4 metres, providing a dynamic area suitable for a variety of sports. With 4,525 standard seats and its design that incorporates basketball, volleyball, badminton, and *sepak takraw* sports courts, the stadium becomes a multipurpose hub for sports activities. Petra Jaya Indoor Stadium is more than just a massive stadium with impressive structure with various amenities available such as conference room, VIP lounge, prayer room, restroom for VIP and public as well as modern centralised air-conditioning, audio and lighting system for functions and events (SSC, 2023a). In addition, it is a community centre where players, fans, and sports enthusiasts come together to enjoy the spirit of rivalry and togetherness. Hence, this sports facility has been used for numerous occasions, either for International, National or State events over the years. Some of the recent notable events were the 26th World Masters' Badminton Championship

2019 (Lim, 2019), Malaysia Open Premier Super Series (The Borneo Post, 2017), Malaysia Day Celebration 2023 (The Star, 2023) and New Year's Eve Countdown 2020 (Pei, 2020).

3.3.2 Pandelesa Rinong Aquatic Centre, Kuching

Originally referred to as the Sarawak Aquatics Centre, this swimming facility is located in Petra Jaya, Kuching, experienced a major makeover and was given the name Pandelesa Rinong Aquatic Centre, which is a meaningful homage to Malaysia's own diving queen. This cutting-edge swimming and diving complex, was named after the Olympic medallist Dato Pandelesa Rinong, is more than just a building but also sets a living example of Sarawak's commitment to sports achievement.



Figure 3.4: Pandelesa Rinong Aquatic Centre, Kuching

As shown in Figure 3.4. the Pandelesa Rinong Aquatic Centre, located inside the Sarawak Sports Complex, was thoroughly planned, and built in accordance with international standards especially to host major events like the 2017 SEA Games and the 2016 Malaysian Games. This aquatic includes training and recreational pools, diving platforms, and an Olympic-sized competition pool, showcasing the venue as one of the top-notch sports facilities in the nation. The pools have been designated into four categories of pools, namely; Competition Pool (51.53m X 25m X 3.05m), Diving Pool (25m X 25m X

5.05m), Training Pool (50.03m X 21m), and Warm-up Pool. Each pool is diligently constructed according to international standards. Following the strict guidelines established by the International Swimming Federation (FINA) from 2013 to 2017, and having been granted clearance by the Amateur Swimming Union of Malaysia (ASUM), the facility satisfies, if not beyond, the requirements for holding elite swimming competitions.

Apart from its stunning architecture, the Pandelega Rinong Aquatic Centre is a flexible space that can accommodate a variety of activities, such as synchronised diving competitions and national swimming championships. Its amenities, which include a boulevard, a conference room, plenty of parking lots, office spaces, an LED screen, and a celebration area, provide a welcoming atmosphere for both competitors and spectators. With 2,070 seats, the centre can accommodate large crowds of people during important aquatic events, and it becomes a lively hub where enthusiastic supporters gather and cherish the positive atmospheres.

3.3.3 Sarawak Lawn Bowl Arena, Kuching

The Sarawak Lawn Bowl Arena is impeccably equipped with adequate amenities, aimed at giving an unforgettable experience for both players and spectators. The venue features cutting-edge lawn bowling playing field that are professionally maintained to match international standards. Participants' general comfort is enhanced by the changing rooms provided. The arena also has a lounge space for socialising, making it a comfortable atmosphere for users. The design of the arena maximises the playing space by providing bowlers with a specific place to train or demonstrate their talents. Spectator seating areas (1000 people) are well-positioned to allow good views of the action in the bowl, improving the overall viewing experience. Equipped with new LED high bay lightings and safety

protection features prior to the upgrading works, the arena was completed and converted into a large badminton hall in 2019. In line with the International Badminton Master Competition, the carpets installed during the badminton competition are of high standard. Furthermore, the retractable seats allow space management to be customised depending on competition or events. Figure 3.5 shows the sports facility mentioned.



Figure 3.5: Sarawak Lawn Bowl Arena, Kuching

Moreover, the arena is furnished with cutting-edge audiovisual technology, making them suitable for presentations and social events. From competitive lawn bowling competitions to community-driven programmes, the arena offers a variety of activities. Local and regional sports activities such as departmental or agencies competitions have made this venue their top choices, attracting both bowlers, badminton players and spectators.

3.3.4 Sarawak Stadium, Kuching

Standing proudly inside the Sarawak Sports Complex in Petra Jaya, just a short thirty-minute drive from Kuching City's centre, the Sarawak Stadium, as shown in Figure 3.6, is a multipurpose symbol that embodies Sarawak's dedication to sports achievement. This sublime architecture can accommodate 40,000 people, making it the largest stadium in

Sarawak to date, having numerous potentials to stage events to produce an exhilarating environment.



Figure 3.6: Sarawak Stadium, Kuching

Sarawak Stadium, which was completed in the 1990s, is famous for officially becoming one of the preliminary sites for the 1997 World Youth Cup football championships. Its growing status became prominent as it was a major attraction for spectators during the 18th Malaysia Games and 18th Malaysian Paralimpiad Games (SSC, 2023b). This contemporary sports arena is larger than its physical dimensions and has cutting-edge amenities that improve the viewing experience. The field is illuminated with a LED screen and scoreboard, while VIP grandstand and Royal box area provide esteemed visitors an exceptional viewpoint. VIPs can also enjoy the comforts of the lounge and observation areas designed to suit their preferences.

For Malaysian football, the Sarawak Stadium has served as a playing field besides being used for various national events. It has been the home ground for matches in the Malaysian Super League and the historical Malaysia Cup, helping Sarawak to propel in the football sports since its opening. In 2017, the stadium was selected as host for the 31st Malaysia International Open Masters Athletics Championships (SSC, 2023b). Nearly a thousand competitors from seven nations, including Malaysia, participated in both track and

field events throughout, transforming the stadium into one of the most sought-after facilities for sports activities. Additionally, many sports school events have been using the facility from time to time as part of their annual activities. One of the biggest music festivals in Borneo, Borneo Sonic 2023, an international concert was even held at this venue, drawing more than 20,000 spectators to witness their favourite artists performed (Sarawak Tourism, 2023).

3.3.5 State Stadium, Kuching

With its 26,000 seats and five hectares of land, the stadium is intended to symbolise both community pride and sports passion. It is famously known to be the home field of the Sarawak Football Team. The Sarawak State Stadium, however, is more than just a sports venue. In 1990, it hosted the historic 3rd Malaysia Games, in which Sarawak won the championship. Aside from sports and football activities, the stadium can also host large official and popular events such as sports days or carnivals, outdoor concerts, and cultural performances. Equipped with modern amenities such as an electronic scoreboard, floodlights, and a PA system, the stadium adopts the latest mechanical and electrical equipment that enhances the overall experience for both athletes and spectators. Other amenities include a lounge, grandstand, a VIP viewing room, media room, control room and changing rooms. A visual representation of the sport facility can be shown in Figure 3.7.



Figure 3.7: State Stadium, Kuching

3.3.6 Sibü Indoor Stadium, Sibü

The stadium's construction was completed on 2nd April, 2016. To mark the commencement of the facility's usage, Tan Sri Datuk Amar Mohd Morshidi Abdul Ghani, State Secretary, performed the ceremonial opening on July 11, 2016. The Sibü Indoor Stadium is located along the Old Airport Road in Sibü, Sarawak. It has eight badminton courts, two volleyball courts, a basketball court, two jogging tracks, and a large sitting area that can accommodate up to 4,250 people (SSC, 2023c). Internally, several essential rooms are available such as meeting room, VIP rooms, security room, medical and doping rooms to support any events or functions required. The stadium also has 479 carpark space, 89 motorbike parking places and 16 spaces reserved for stage coaches. Meanwhile the entire facility is air-conditioned, apart from having basic amenities like a PA system, special LED lightings, two electronic multimedia scoreboard, and jogging track tiles to cater to users. With the modern design and equipment, Sibü Indoor Stadium was used for the 18th Malaysia Games (Moh, 2016), and even hosted the six-day Victor Far East Malaysia Masters in 2017 (Wong, 2017). Figure 3.8 exhibits the images of the sports facility.



Figure 3.8: Sibu Indoor Stadium, Sibu

3.3.7 *Muhibah Stadium, Bintulu*

The *Muhibah* (Indoor) Stadium in Bintulu is more than simply a sports facility. It is a flourishing community hub outfitted with modern facilities to improve the whole experience for users and visitors alike. The stadium's history began with the groundbreaking ceremony in 1997, which marked the official opening of the facility in committing social development to the local community. The Indoor Stadium, can be seen in Figure 3.9, has a unique and aesthetically pleasing structure. Its design emphasises open areas, creating a friendly environment. The layout has been meticulously constructed to suit a variety of athletic events and community activities. The architectural aspects prioritise accessibility and inclusion, resulting in a welcoming atmosphere for all.



Figure 3.9: *Muhibah Stadium, Bintulu*

The stadium features a variety of amenities, including rooms for meetings, conferences, and social gatherings. The building design offers effective air conditioning systems, ensuring that athletes and spectators are comfortable. The electrical system is sufficiently well-designed with proper lighting illuminance, accommodating the different demands of the facility's activities. With a large seating capacity of approximately 3000, the stadium can easily accommodate large number of spectators, improving the overall experience during sporting events and community activities. To make visitors' lives easier, the stadium provides abundant parking for both vehicles; cars (100 lots) and motorcyclists (200 lots). This guarantees that events may be attended without difficulty, removing concerns about parking availability. Apart from that, the landscaping and surrounding areas are supplemented with jogging pathway for leisure activities.

3.3.8 Stadium *Bandaraya Miri*

This indoor sports facility is situated within the bustling town of Miri, strategically positioned to serve the community and sports athletes. Officially opened in 2002, it has previously been utilised for various functions, events, and competitions throughout the years. Having a centralised air-conditioning system within the arena, it is ideal for organisers to hold large gatherings with other necessary amenities already in place. With the capability to support approximately 3500 people in the arena, the facility also provides adequate restrooms for users, rooms for VIP holding areas, administration office, gymnasium for training, and meeting rooms for organisers. To date, most of the activities carried out in this facility involve school sports day activities, leisure sports games such as futsal, badminton, and volleyball as well as training for athletes. Parking spaces are also provided for 145 cars, 50 motorcycles, easy access for disabled people and the adjacent outdoor stadium further increases the attractiveness of this facility to have field and track events concurrently. Fully

operated and handled by the Northern Zone officers, the facility continues to be among the main hub for sports and recreational activities in the district. Figure 3.10 visually displays the images of the sports facility.



Figure 3.10: Stadium *Bandaraya* Miri, Miri

3.4 Sampling

After carefully considering the design approach to take, it was necessary to decide how the data would be collected. A sample is defined as the set of groups from which data is collected (Pyun, 2013). In consideration of time and cost constraints to measure every unit of the population, samples are typically done in studies for practical reasons. The next section presented the sampling method used and explained the criteria to consider when determining sample size.

3.4.1 Sampling Strategy

In a quantitative cross-sectional study, the sampling strategy involves selecting a subset of participants from the population of interest from certain periods of time. The respondents, who had a history of using the sports facilities were the target population and are therefore, chosen based on purposive sampling method.

Purposive sampling selected certain samples from this population and considered appropriate because of the research topic, questions, and hypotheses. Purposive sampling also allowed for the individual who met the parameters to complete the survey, provided they had the experience of using the sports facilities for any purposes, either during sports activities, events, or functions. This criterion was chosen due to their knowledge and understanding of the current conditions of the facilities, having visited and used the sports facilities between 2022 to 2023 based on the facility management record. This requirement was crucial as it ensured that all respondents had firsthand experience with the facilities, enabling them to accurately assess and provide insights on the conditions and services offered. Another requirement was that respondents be over 18 years of age, ensuring they have the maturity to provide informed opinions on the measurement items. Additionally, these individuals were considered potential repeat users, capable of providing insights into their behavioural outcomes.

Before participating in the survey, they were screened with filter questions to ensure they met the age and experience criteria. This aligned with Robinson (2014), underlining the essence of having these individuals as sample to attain a full range of different views that matter to the research goals since they have the relevant experiences and knowledge. Accordingly, the research survey was carried out via online google form, and in-person on site.

3.4.2 Sample Size

As mentioned by Sekaran and Bougie (2010), sample size is the proportion of the population needed to guarantee that there is sufficient data to make inferences. Determining the appropriate sample size for this study was based on the G*Power software, version

3.1.9.7. The G*Power software was easy to use for calculating the minimal sample size for various statistical methods. As such, the proposed population was identified with seven predictors, determined through G*Power. Using F-test family, a priori required sample size, given α , power, and effect size, the total of 153 minimum sample size were necessary to pursue this study (as shown in Figure 3.11).

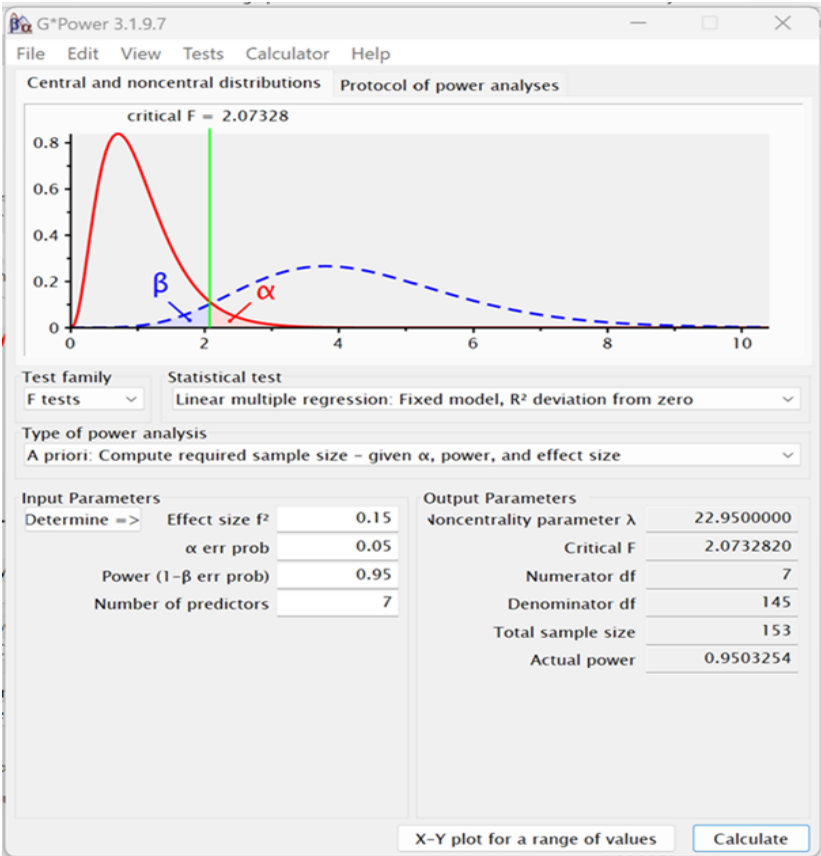


Figure 3.11: G-Power for Calculating Sample Size

Other guideline to support the study sample size can be generally referred to the sample-to-variable ratio criterion for calculation. Though a minimum observation-to-ratio of 5:1 was suggested by the sample-to-variable ratio, nevertheless, ratios of 15:1 or 20:1 were recommended (Hair et al., 2018 cited in Memon et al., 2020). Since there were seven

independent variables in this research, with 20 observations per independent variables, this study required a minimal of 140 respondents as its sample size.

It was also suggested by Memon et al. (2020), a sample size ranging from 160 to 300 valid observations is deemed appropriate for conducting multivariate statistical analysis. Past studies have employed the quantitative method from the context of sports. comprising 164 samples while assessing the users' perceptions of service quality in a multi-purpose sports facility (Çakmak & Akcan, 2024), whereas Pourhossein et al. (2024) used 175 samples to examine the influence of core product quality on financial and sporting performance, with fan satisfaction mediating the relationship, in Iran's two most popular football clubs.

3.4.3 Sampling Frame

For this study, in view of the eight selected sports facilities, five in Kuching, one in Sibü, one in Bintulu and one in Miri, justified by their strategic geographical locations and most frequently used facilities by users, estimation of the population upon consultation with the facilities' top management personnel from the marketing, technical divisions, and on-site venue managers allowed for the chosen samples to serve as the representation of the population. Given the approximate population size of 91,500 active users across the eight selected sports facilities, with a minimal sample size of 153 as calculated via G-power statistical analysis and considering a 60% response rate, 255 initial samples were preferred in this study. Prior to that, a proportional sampling technique was adopted to have a proper distribution of questionnaires for the eight sports facilities based on the estimation of the usage of each sports facility. Table 3.4 summarised the breakdown of questionnaire allocation among the selected sports facilities in Sarawak.

Table 3.4: Allocation of Questionnaires for the Selected Sports Facilities in Sarawak

Location	No	Sports Facilities	Sampling Frame (Estimated active users) (SSC, 2023)	Percentage (%)	Proportional Sampling
Kuching	1	Pandelela Rinong Aquatic Centre	8500	9.29	24
	2	Sarawak Lawn Bowl Arena	7000	7.65	19
	3	Indoor Stadium	15000	16.39	42
	4	State Stadium	10000	10.93	28
	5	Sarawak Stadium	25000	27.32	70
Sibu	1	Sibu Indoor Stadium	10000	10.93	28
Bintulu	1	<i>Muhibah</i> Indoor Stadium	8000	8.74	22
Miri	1	Miri <i>Bandaraya</i> Stadium	8000	8.74	22
Total	8		91500	100	255

3.4.4 Unit of Analysis

According to Patel (2009), the most fundamental aspect of what is being examined or observed may include individuals, groups, organisations, countries, states, and industries. It refers to the information gathered and analysed to reach conclusions. Choosing a suitable unit of analysis is critical since it has a direct impact on the study's results and the generalisability of the findings in line with the study's objectives. Therefore, responses received from individuals of the sports facility about the satisfaction, loyalty, and reuse intention constituted the unit of analysis in this study.

This study prioritised the participation of individuals to deeply comprehend the experiences within Sarawak's sports facilities. A diverse representation of sports enthusiasts who utilised these public sports facilities between 2022 and 2023 formed the core of this investigation. Specifically, the aim was to engage regular users involved in sports, fitness, or recreational activities, ensuring an appropriate selection across distinct areas in Sarawak who met the criteria. The targeted respondents were users from the sports associations, athletes, coaches, visitors, and government officers who had patronised the selected sports facilities, ensuring a comprehensive range of perspectives on the sports service environment from their experiences. Excluding individuals under 18 years and those who have not utilised the facilities helped evaluate the perceptions of active users more accurately. By incorporating diverse demographics and locations, the study aimed to capture various facets of users' experiences, aligning with Sarawak's dynamic community. In this regard, the users of these sports facilities were assumed to be appropriate subjects for the present research.

3.5 Procedure

This research procedure conducted cross-sectional online survey methods study in order to capture data in connection with a generational study on the perceptual outcomes of sports service environment effects towards users' satisfaction and behaviour intentions within the public sports facilities.

3.5.1 Data Collection

This method involved distributing the questionnaires to a large group of participants. For the purpose of this study, the online survey platform was deemed appropriate for the following reasons. First, it was relatively fast, cheap, and easy to process. They offered considerable savings in cost and results in prompt responses when compared to postal

surveys (Fricker & Schonlau, 2002). Secondly, respondents may take as much time as they needed to start filling up the questionnaire and return later to the question where they left off earlier to assure data reliability. Thirdly, the burden of inputting, tabulating, and analysing data can be reduced. Data can be automatically entered into a database or copied into analysis software such as SPSS and SMART PLS, thereby decreasing transcription errors caused by manual labour inputs. In this research, the process of the data collection can be illustrated in Figure 3.12.

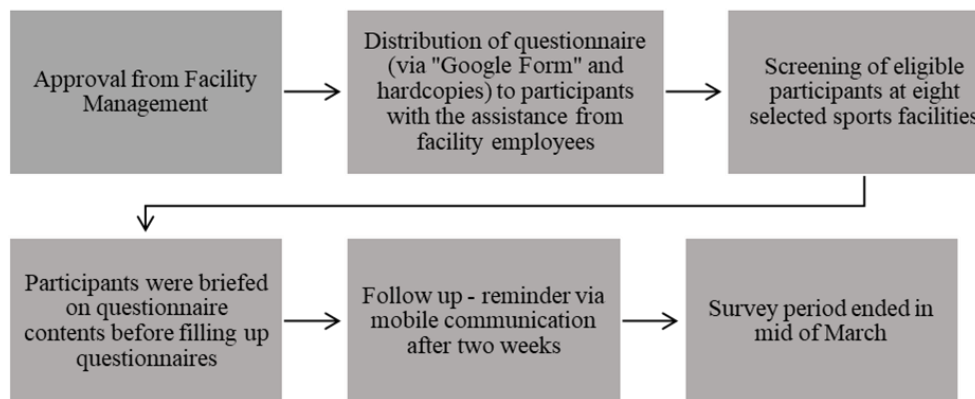


Figure 3.12: Data Collection Process

Before collecting data with regards to the public sports facilities involved, a written letter for approval was obtained from Sarawak Sports Corporation, to get permission for the study to be carried out and assurances for the data collected would be used primarily for academic purposes only. Upon approval, an online platform (google form) by using social media application (WhatsApp) containing the questionnaires acted as one of the methods for disseminating and collecting data from potential respondents. In short, the use of an internet-based survey method for this research study has several advantages, including easier access to the population being evaluated, a larger sample size, lower costs, more timely data collection, and participant anonymity (Rice et al., 2017).

In addition, considering that the survey was conducted in view of eight selected sports facilities at multiple locations, hardcopy questionnaires were disseminated for those who might have difficulty accessing online survey or preferred the conventional method. Hence, it was concluded that online and onsite surveys would work best in terms of survey administration and sample size. Alternatively, on site hardcopy questionnaires were prepared and site surveys were conducted at eight selective sports facilities with the assistance from the respective facility employees.

The survey questionnaire was distributed to respondents from the period of two months, ranging from mid of January 2024 until mid of March 2024. Throughout the period, users from sports associations, coaches, athletes, visitors, and government officers who had patronised the selected sports facilities were the targeted respondents. These individuals were then approached and screened to confirm that they met the age and experience criteria. Anyone who had visited the public sports facilities and more than 18 years old was eligible to participate in the survey. This requirement was to ensure that the respondents would answer based on their experiences prior to visiting the public sports facilities in Sarawak.

Respecting participant autonomy was pivotal, thus ensuring clear, accessible information about the study's purpose, procedures, and potential impact were briefed in advance to each participant in the questionnaire before they begun the survey. To safeguard participants' identities and privacy, all collected data would be anonymous, and stringent confidentiality measures were implemented to encourage open sharing of thoughts and experiences within the survey questionnaire.

Then, the respondents were expected to rate services on the basis of the sports facility conditions according to their perspectives and actual experiences. For each participant who

fulfilled the criteria, a survey link was transferred to the digital device owned by the participant via 'WhatsApp' message to complete the survey. Also, for the comfort of users on site, a laptop was provided with the survey pre-loaded on the screen for each user, to provide a convenient way for the users to complete the survey.

As for hardcopy distribution, the respondents were required to complete the questionnaire on site if they were comfortable during the session. For takeaway questionnaires, they were reminded every fortnight on the status of completing the questionnaire. Once all data were ready for computation, statistical analyses was performed for interpretation of the results.

3.6 Data Analyses

The collected data was assessed by using quantitative data analysis techniques to achieve the stated research objectives of the study and to allow meaningful information to be produced from the research. To examine the underlying structure of the data, descriptive analysis, the reliability, and validity of the constructs data were initially analysed. Moreover, to investigate the relationship among the service environment dimensions, emotional responses and behavioural responses, partial least square structural equation modelling approach was conducted to analyse the data.

3.6.1 Descriptive Analysis

The commonly used and fundamental data analysis approach is descriptive analysis. Descriptive analysis is a type of data simplification that presents what to know about capacities, needs, techniques, practises, policies, demographics, and environments in a way that is relevant to a given research or topic (Loeb et al., 2017). Using current data (e.g., mean, median, and frequency) with IBM SPSS 29 tool aided in describing and summarising the

demographic characteristics of the respondents in this study. In simpler terms, SPSS could comprehensively provide valuable information on frequency distributions for demographic profiling in addition to detailed output of measures such as mean, median, and standard deviation.

3.6.2 Partial Least Square Structural Equation Modelling (PLS-SEM)

A second-generation multivariate data analysis method, structural equation modelling (SEM), is often used in marketing research because it tests theoretically supported linear and additive causal models (Haenlein & Kaplan, 2004). PLS-SEM has the capacity to manage complex models with multiple latent variables, its adaptability to non-normally distributed data and small sample sizes, as well as its ability to handle both formative and reflective constructs (Hair et al., 2022). It delivers significant insights through predictive analysis and provides comprehensive tools for model evaluation, making it ideal for exploratory research and theory development. For improving the understanding of increasingly complex theoretical models, sports management is a particularly suitable discipline for applying PLS-SEM (Cepeda-Carrión & Cepeda-Carrion, 2018). By using SMART PLS 4.0 statistical software, the partial least square structural equation modelling approach was used for comprehensive measurement model tests and explored the path coefficient evaluations as well as the goodness of fit of the proposed structural model.

Within the scope of this study, the dependent variables were associated with the endogenous latent constructs described in the conceptual framework, whilst the independent constructs reflected the exogenous latent constructs. Typically, the SEM is mainly used to measure the cause and effect in the model. For latent constructs, they are not measured directly but multiple questions are employed to measure the constructs. There are two main

components of this approach: the outside model (measurement model) and the inner model (structural model). The inner model describes the relationships between independent and dependent latent constructs, while the outer model describes the relationships between latent constructs and their observed items. Through comprehensive measurement model tests, it evaluates the reliability and validity of constructs. Once the study's constructs are shown to be trustworthy and valid, the quality of the structural model and hypotheses are tested to assess the proposed hypotheses between constructs. In this study, the appropriate data analyses to be used were explained in the forthcoming section.

3.6.2.1 Common Method Bias

In general, a full collinearity test is performed on the data to check for Common Method Bias (CMB) issue if the data was collected from a single source. As suggested by Kock (2015), by using a dummy variable as dependent variable, all the other variables would then be regressed against the created dummy variable to detect for false internal consistency. In SMART-PLS, Variation Inflation Factor (VIF) should be lower than 3.3, indicating single source bias is not significantly present in the data.

3.6.2.2 Measurement Model

There are two main tests for measurement model, namely the reliability and validity tests. Indicators that are highly correlated and interchangeable should be examined extensively for reliability and validity if they are reflective and highly correlated (Petter et al., 2007). Reliability can be assessed by testing the Composite Reliability (CR) whereas the measurement for presence of both convergent and discriminant validity is required for the constructs to be valid (Bagozzi et al., 1991). Fornell and Larcker (1981) stated that convergent validity assures that items of a construct are expected to relate to each other do

exist. Convergent validity is determined by inspecting the loading and Average Variance Extracted (AVE) values. As for discriminant validity, Heterotrait Monotrait (HTMT) Ratio analysis is calculated to measure the distinctness of the constructs.

i) Composite Reliability

Two common methods to assess the construct's reliability are via composite reliability and Cronbach's alpha (α). For both criteria, it is generally accepted that values should be more than 0.70 (Hair et al., 2020). However, weighted CR is more accurate than unweighted Cronbach alpha due to the uneven reliability of indicators. Prior to that, CR has to be evaluated and reported (Hair et al., 2019). In some circumstances, the internal consistency reliability, which includes the composite and Cronbach alpha reliability, may be too high. Thus, the individual items are redundant if the reliability result is 0.95 or above.

ii) Average Variance Extracted and Loading Factor

The Average Variance Extracted (AVE) is a useful tool for measuring convergent validity. This metric evaluates all indicators in each construct by calculating the mean value of the squared loadings of the indicators which are related to the construct. Fornell and Larcker (1981) proposed that acceptable AVE value should be at least 0.5 or greater to ensure convergent validity, indicating that on average, more than half of its indicators can be explained by the construct. To assess validity of each indicator, Loading Factor test is performed to determine the correlation score between the indicators and construct, whereby value for each indicator should be higher than 0.7 to be valid as suggested by Chin (1998).

iii) Heterotrait-Monotrait Ratio

According to Hair et al. (2010) discriminant validity implies that a measure of the construct is empirically distinct and captures phenomena of interest that other measures in a

structural equation model do not capture. Henseler et al. (2015) recommended the HTMT ratio of correlation method as the appropriate strategy to employ to measure discriminant validity. Discriminant validity is evident when the shared variance inside a construct (AVE) is greater than the shared variance across the constructs. Cutoff scores of 0.85 and 0.90 can be used by researchers to interpret the findings of the HTMT.

3.6.2.3 Structural Model

The usage of PLS SEM allows for the analysis of latent constructs relationships, with emphasis on how they are interrelated in the model. Prior to conducting hypothesis testing, it is crucial to ascertain the quality of the constructs in structural model, whereby analyses such as R^2 and f^2 , model fit, and path coefficients have been fulfilled. The analysis can be employed to assess the correlation of various items in the questionnaire (Lu & Wei, 2023). PLS-SEM statistical approach is critical in understanding the complex relationship between various service environment components within sports facilities (i.e., physical attributes, layout, aesthetics, amenities, service quality, comfort, and safety), and their impact on users' satisfaction, loyalty, and reuse intention, whether the relationships among them are strong or weak. This strategy enables a more in-depth assessment of how these components correspond with users' attitudes and future behavioural preferences. It reveals if certain characteristics of the sports environment have a substantial influence on users' overall satisfaction, loyalty, and probability of reusing the facility.

i) R-Square

R-square (R^2) represents the coefficient of determination in analysis, indicating the extent in which the variance in dependent constructs can be explained by independent constructs in the model. It simply means how much change in the dependent construct can

be accounted by one or more independent constructs. Higher R^2 values indicate a stronger ability of the independent variables to explain the variability in the dependent variable. Chin (1998) recommended R^2 values for endogenous latent variables based on: 0.67 (substantial), 0.33 (moderate) and 0.19 (weak).

ii) Path Coefficient

Estimates for the path coefficients, that demonstrate the probable links between the constructs, are given following the computation of a PLS model. The range of path coefficient values is standardised between -1 and +1, wherein coefficients nearer to +1 signify strongly positive correlations, while those closer to -1 indicate strongly negative relationships. Nevertheless, bootstrapping is required to generate a standard error in order to test for significance, even though values near -1 or +1 are usually statistically significant (Helm et al., 2009). The t-value and p-value of the path coefficients provide an understanding of hypothesis testing, whether there is significance as shown by the path coefficients. If the t-statistic value is more than the critical value of 1.96 or the probability value is less than the Level of Significance ($\alpha = 5\%$), then the hypothesis is accepted.

iii) F-Square

In addition, F-square (f^2) refers to an endogenous variable in the structural model that may be affected by a number of exogenous variables. The effect size, f^2 measures the variation if removing an exogenous variable can have an effect on the dependent variable. It can also be noted that f^2 is the change in R^2 when an exogenous variable is excluded from the model. As stated by (Cohen, 1988), f^2 effect size of equivalent or greater than 0.02, 0.15 and 0.35 can be observed as small, medium, and large respectively.

iv) Predictive Relevance

To determine the model prediction capabilities, cross validated redundancy, Q-squared (Q^2) measures whether the model has predictive relevance or otherwise. With Q^2 values greater than zero, it indicates the values are well-constructed and the model has predictive relevance (Hair et al., 2014). Higher Q^2 values imply a better predictive accuracy as the independent variable serves as an explanatory variable to predict the dependent variable. Values of 0.02, 0.15, and 0.35 indicate weak, moderate, and strong degree of predictive relevance of each effect (Hair et al., 2013).

v) **Model Fit**

Furthermore, structural models are primarily concerned with model fit. As for Goodness of Fit test, it is used to assess the overall model fit with standardised root mean square residual (SRMR) value lesser than 0.08 and Normed Fit Index (NFI) value more than 0.9 are preferred.

3.7 Summary

To recap, this chapter outlined the procedures used in the research design by initially detailing out the research sites applicable in the study. This was followed with the meticulous instrument and validation of selected measures for the empirical study of the assessed variables. For comprehensive understanding, the sampling criteria for the quantitative method was elaborated and data collection processes were explained thoroughly. Lastly, the study profoundly discussed about PLS-SEM and types of relevant tests as an analytical approach in handling data analyses. Overall, Chapter 3 set the groundwork for conclusive findings and interpretations of the relationships in the following chapter.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter outlined the characteristics of the sample population, detailing the descriptive statistics of the sample demographics and the comprehensive results derived from the statistical analyses of the data. Findings explored from both analyses, descriptive and data were examined and discussed thoroughly in conjunction with the theoretical model, providing an in-depth empirical analyses and comprehension of the variables pertaining to the study. Since the undertaking of this study revolves around the sports service environment towards users' satisfaction, loyalty and reuse intention, the post-analysis examination ascertained the effects.

4.2 Data Cleaning

The data was checked and verified to be free from missing value. However, straight-lining behaviour, characterised by respondents providing identical or highly similar answers across Likert-scale survey questions, posed a challenge to data quality (Reuning & Plutzer, 2020). Initially, a dataset consisting of 216 responses underwent scrutiny, analysis, and refinement utilising the standard deviation method to eliminate invalid entries (Pollien et al., 2020). Notably, 54 responses were discarded due to exhibiting straight-lining behaviour, indicated by a variance close to zero. This occurrence could be attributed to the higher levels of education and experience among respondents, as individuals with lesser educational attainment and experience were more prone to engaging in straight-lining behaviour (Kim et al., 2019). Moreover, some respondents might be reluctant to rate the service truthfully

due to social desirability bias. Consequently, following the removal of straight-lined responses, the final dataset was reduced to 162 responses.

4.3 Respondents' Demographics

The respondents' demographic profiles provided important information about the composition of the study sample. A total of 255 questionnaires were distributed among users within the vicinity of the sports facilities at designated districts, such as Kuching, Sibul, Bintulu and Miri in Sarawak, Malaysia. Through the analysis of questionnaire data, the final sample size for analysis comprised of 216 participants. After data were cleaned, 162 responses were used for the final data analysis, revealing a 75% valid response rate. Utilising SPSS version 29, an examination of the demographic profile of the respondents was carried out.

The questionnaire data revealed the distribution of gender among respondents, with 57 (35.2%) identified as female and 105 (64.8%) as male. This finding suggested that the survey sample adequately represents both genders, but leans towards male respondents, providing a comprehensive insight into the preferences and behaviours of individuals regarding sports facility usage. Notably, majority of respondents fell within the 25-34 age group, comprising 62 (38.3%) of the total samples, followed closely by the 35-44 age group at 51 (31.5%). Other age groups' ranges were from 45-54 years old, 18-24 years old as well as 55 and above years old comprised of 30 (18.5%), 12 (7.4%) and 7 (4.3%) respondents respectively. These results indicated that individuals in their mid to late twenties and thirties are frequent patron of the sports facility, highlighting the classification within these age groups was high in this demographic segment for sports-related initiatives.

A significant portion of respondents hold a bachelor's degree (65 or 40.1%), followed by those with diploma (53 or 32.7%) and 44 (27.2%) of them have secondary qualification with *Sijil Pelajaran Malaysia* certification. This suggests a higher level of education among participants are highly involved with sports facility usage. In addition, the data reflected that 141 (87.0%) of respondents are employed full-time, while 8 (5.0%) summed up the respondents from the self-employed and retired categories. Individuals from the government sector constituted the largest group among respondents, representing 78 (48.1%) of the sample. This was followed by private sector employees (63 or 38.9%), students (12 or 7.4%), and 1 (0.6%) who is unemployed, indicating a diverse range of employment statuses within the study population.

Sarawak Stadium emerged as the most visited or utilised sports facility, with 39 (24.1%) of respondents while Miri Indoor Stadium and Indoor Stadium in Kuching came close to match in terms of respondents with 30 (18.5%) and 26 (16.0%) of the study population. As for the other sports facilities, the distribution of respondents was undertaken at Pandelesa Rinong Aquatic Centre (19 or 11.7%), State Stadium (17 or 10.5%), *Muhibah* Stadium (11 or 6.8%), Sarawak Lawn Bowl Arena (11 or 6.8%), and Sibu Indoor Stadium (9 or 5.6%). A large group of the respondents (71 or 43.8%) reported visiting their chosen sports facility within the last month. Engagement with the sports facilities among survey participants can also be seen within the last three months (20 or 12.3%) and within the last six months (26 or 16.0%), whereas 30 (18.5%) respondents visited the sports facility in the past year. However, the remaining respondents of 15 (9.3%) last utilised the venue more than a year ago. These findings are summarised in Table 4.1.

Table 4.1: Demographic Statistical Breakdown of the Respondents

Demographic Subject	Category	Respondents (<i>N</i> = 162)	
		Frequency	Percentage
Gender	Female	57	35.2
	Male	105	64.8
Age Group	18-24 years	12	7.4
	25-34 years	62	38.3
	35-44 years	51	31.5
	45-54 years	30	18.5
	55 years and above	7	4.3
Education	Bachelor's Degree	65	40.1
	Diploma/ Advanced Certificate/ Skilled Certificate	53	32.7
	<i>Sijil Pelajaran Malaysia</i> (SPM)	44	27.2
Employment Status	Government sector	78	48.1
	Private sector	63	38.9
	Retired	3	1.9
	Self-employed	5	3.1
	Student	12	7.4
	Unemployed	1	0.6
Sports Facility	Indoor Stadium (<i>Perpaduan</i>), Kuching	26	16.0
	Miri Indoor Stadium (<i>Bandaraya</i>), Miri	30	18.5
	<i>Muhibah</i> Stadium, Bintulu	11	6.8
	Pandelela Rinong Aquatic Centre, Kuching	19	11.7
	Sarawak Lawn Bowl Arena, Kuching	11	6.8
	Sarawak Stadium, Kuching	39	24.1
	Sibu Indoor Stadium, Sibu	9	5.6
	State Stadium, Kuching	17	10.5
Last Visited	Within the last month	71	43.8
	Within the last three (3) months	20	12.3
	Within the last six (6) months	26	16
	Within the last year	30	18.5
	More than a year ago	15	9.3

4.4 Statistical Analysis of the Variables

In the preliminary data examination, the analysis included summary measures of central tendency and variability observed in each item, offering insights into the distribution and characteristics of the data. The mean observed the average responses provided by the participants, while the standard deviation offered insights into the degree to which responses diverged from or dispersed around this mean. The findings are presented in Table 4.2.

Based on 162 valid responses, the mean and standard deviation were computed for this investigation. Independent variables, namely; physical, layout, amenities, facility aesthetics, service quality, comfort, and safety, as detailed in Table 4.2, were evaluated on a 7-point Likert scale. The empirical results indicated that the highest mean was recorded for one of the amenities' items (AME2), with an average score of 5.32, denoting that, on average, participants rated the item at this level. On the contrary, an item of amenities (AME4) was reported to have the lowest mean at 3.97, indicating their disagreement on this item. Furthermore, the standard deviation for service quality indicator (SQ1) was 1.188, indicating minimal variance in respondents' viewpoints regarding this item measurement. As for item, AME4 under amenities, the higher standard deviation of 1.688 showed the values were widely dispersed from the mean value among the respondents in relation to this item.

In view of the dependent variables, users' satisfaction, loyalty, and reuse intention, these variables were also assessed by utilising a 7-point Likert scale. The analysis revealed that users' satisfaction item, USAT4 garnered the highest mean score of 5.83, suggesting that, on average, respondents rated their satisfactions at this level. In contrast, USAT1 obtained the lowest mean score of 4.78. Moreover, the standard deviation for USAT5 was 1.628, indicating a modest degree of variation among participants' perspectives

concerning users' satisfaction for this item. Meanwhile, loyalty item, LOY2 was placed lowest at 1.103 for its standard deviation in this regard.

Table 4.2: Summary of Mean and Standard Deviation

Items	Mean	Standard Deviation	Items	Mean	Standard Deviation
PHY1	4.75	1.437	SQ4	5.10	1.239
PHY2	4.56	1.474	SQ5	5.27	1.225
PHY3	4.86	1.485	COMF1	5.02	1.323
PHY4	3.99	1.526	COMF2	4.90	1.348
PHY5	4.50	1.561	COMF3	4.50	1.573
LAY1	4.62	1.548	COMF4	4.86	1.332
LAY2	5.12	1.387	COMF5	5.14	1.326
LAY3	4.48	1.533	SAF1	4.97	1.362
LAY4	4.36	1.629	SAF2	4.76	1.536
AME1	4.25	1.646	SAF3	4.73	1.409
AME2	5.32	1.523	SAF4	4.23	1.602
AME3	4.21	1.446	USAT1	4.78	1.404
AME4	3.97	1.688	USAT2	5.17	1.315
AME5	4.35	1.506	USAT3	5.06	1.298
AME6	4.97	1.434	USAT4	5.83	1.202
FA1	4.44	1.440	USAT5	5.03	1.628
FA2	4.37	1.474	LOY1	5.38	1.153
FA3	4.02	1.556	LOY2	5.56	1.103
FA4	4.21	1.442	LOY3	5.10	1.480
FA5	4.10	1.454	LOY4	5.36	1.264
FA6	4.38	1.474	LOY5	5.31	1.282
FA7	4.26	1.514	RUI1	5.35	1.192
SQ1	5.29	1.188	RUI2	5.07	1.493
SQ2	5.08	1.276	RUI3	5.22	1.220
SQ3	5.19	1.249	RUI4	5.30	1.200

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

Likert scale used for variables; 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree, 7 = Strongly Agree

4.5 Partial Least Square Structural Equation Model

PLS-SEM analysis presented the results from the analysis of the data prior to using the SMART-PLS 4.0 software tool, which included the assessment of measurement and structural models. Establishing the reliability and validity of the variables within the measurement model was prerequisite before identifying the significance of relationships among the variables within the structural model. Hypotheses were then determined upon understanding the outcomes of the relationships.

4.5.1 Measurement Model Assessment

In the previous chapter's discussion on reliability and validity, considerable emphasis was placed on comprehending the importance of the measurement model, which is also known as the outer model in Partial Least Squares (PLS) methodology. An essential aspect in the construction of the PLS-SEM model involved the thorough evaluation of the validity and reliability of this measurement model. The primary objective was to determine the consistency of the measurement instruments, ensuring their accuracy in effectively capturing the underlying constructs (Hair et al., 2022). This section explained the statistical methods used to analyse the quantitative research data that were implemented in the SMART-PLS software.

4.5.1.1 Item Loading and Cross Loadings

Initially, loadings and cross loadings were obtained through PLS factor analysis to facilitate cross-loading analysis. Looking at the cross loadings for all items, measuring the constructs were computed to determine if there were any problematic high item loading against the measured construct's items. As such, both indicators of users' satisfaction and physical, USAT5 and PHY5 were removed due to higher loading between users' satisfaction and loyalty as well as amenities and physical. As depicted in Table 4.3, the higher cross

loadings of the indicators of each construct as compared against other constructs indicators evidently showed the overall validity of the constructs does represent the measurement model employed in this study.

Following the recommendation by Hair et al. (2022), a criterion threshold of 0.4 or higher was set for all factor loadings related to reflective constructs. This criterion aimed to assess construct validity effectively. From the data presented in Table 4.3, the factor loading for the constructs; amenities ranged between 0.557 to 0.878, comfort ranged from 0.775 to 0.928 and facility aesthetics ranged between 0.848 to 0.929. Furthermore, the construct of layout displayed factor loadings with ranges from 0.626 to 0.929, physical ranged from 0.778 to 0.895, safety ranged from 0.840 to 0.927 and service quality ranged from 0.900 to 0.932. In addition, for the other constructs, satisfaction showed factor loading ranging from 0.731 to 0.936, loyalty ranged from 0.834 to 0.954 and reuse intention ranged from 0.911 to 0.965. It was noted that no item within the dataset demonstrated loading values falling below the designated threshold of 0.4. However, Hair and Alamer (2022) stated that indicators with outer loadings between 0.40 and 0.70 should be considered for removal only if the deletion results in an increase in both CR and AVE beyond the recommended threshold level. Hence, all the indicators were generally acceptable since the factor loadings were above 0.4 as Cronbach alpha and AVE values were within the acceptable numeric threshold.

Table 4.3: Item Loading and Cross Loading

	AME	COMF	FA	LAY	LOY	PHY	RUI	SAF	SQ	USAT
AME1	0.820	0.521	0.568	0.631	0.518	0.598	0.458	0.535	0.495	0.491
AME2	0.591	0.461	0.347	0.440	0.283	0.427	0.222	0.352	0.356	0.291
AME3	0.832	0.521	0.598	0.686	0.589	0.612	0.548	0.527	0.483	0.554
AME4	0.878	0.497	0.653	0.656	0.586	0.647	0.610	0.549	0.572	0.599
AME5	0.875	0.540	0.679	0.665	0.658	0.729	0.626	0.597	0.555	0.637
AME6	0.557	0.412	0.363	0.372	0.325	0.332	0.306	0.454	0.422	0.417
COMF1	0.524	0.888	0.524	0.506	0.562	0.497	0.486	0.605	0.580	0.635

Table 4.3 continued

COMF2	0.585	0.928	0.597	0.546	0.574	0.548	0.507	0.641	0.635	0.678
COMF3	0.687	0.855	0.694	0.716	0.707	0.609	0.662	0.757	0.703	0.750
COMF4	0.527	0.885	0.548	0.487	0.566	0.534	0.521	0.597	0.612	0.674
COMF5	0.387	0.775	0.391	0.330	0.464	0.422	0.412	0.466	0.491	0.543
FA1	0.597	0.607	0.848	0.662	0.608	0.692	0.602	0.638	0.582	0.666
FA2	0.669	0.563	0.874	0.664	0.641	0.701	0.657	0.681	0.603	0.659
FA3	0.671	0.574	0.894	0.690	0.654	0.711	0.657	0.639	0.634	0.724
FA4	0.598	0.543	0.904	0.580	0.570	0.638	0.579	0.512	0.477	0.616
FA5	0.629	0.532	0.897	0.614	0.565	0.662	0.572	0.514	0.487	0.618
FA6	0.638	0.583	0.917	0.657	0.631	0.676	0.628	0.587	0.551	0.711
FA7	0.684	0.632	0.929	0.688	0.630	0.681	0.635	0.606	0.557	0.683
LAY1	0.641	0.552	0.599	0.864	0.616	0.632	0.535	0.632	0.596	0.629
LAY2	0.433	0.506	0.420	0.626	0.383	0.539	0.323	0.408	0.481	0.401
LAY3	0.730	0.462	0.702	0.900	0.588	0.675	0.568	0.579	0.480	0.568
LAY4	0.711	0.538	0.691	0.929	0.605	0.653	0.585	0.610	0.545	0.608
LOY1	0.528	0.625	0.617	0.546	0.899	0.527	0.715	0.617	0.616	0.773
LOY2	0.517	0.587	0.505	0.492	0.834	0.485	0.585	0.472	0.506	0.644
LOY3	0.643	0.543	0.632	0.637	0.911	0.538	0.762	0.617	0.618	0.715
LOY4	0.667	0.639	0.664	0.651	0.954	0.582	0.781	0.633	0.660	0.798
LOY5	0.669	0.654	0.694	0.679	0.950	0.596	0.816	0.654	0.709	0.809
PHY1	0.614	0.459	0.584	0.592	0.473	0.812	0.413	0.461	0.470	0.527
PHY2	0.660	0.550	0.709	0.634	0.576	0.895	0.584	0.636	0.589	0.644
PHY3	0.547	0.531	0.574	0.537	0.409	0.778	0.369	0.401	0.441	0.493
PHY4	0.637	0.476	0.644	0.705	0.518	0.825	0.509	0.536	0.487	0.543
RUI1	0.563	0.581	0.624	0.560	0.754	0.515	0.911	0.624	0.628	0.783
RUI2	0.608	0.539	0.661	0.609	0.754	0.540	0.919	0.609	0.677	0.736
RUI3	0.596	0.571	0.656	0.575	0.774	0.543	0.965	0.560	0.641	0.739
RUI4	0.592	0.566	0.647	0.540	0.737	0.542	0.940	0.552	0.624	0.723
SAF1	0.515	0.635	0.533	0.540	0.557	0.520	0.514	0.904	0.623	0.717
SAF2	0.634	0.655	0.675	0.620	0.660	0.600	0.630	0.927	0.638	0.771
SAF3	0.603	0.710	0.617	0.655	0.572	0.586	0.520	0.912	0.644	0.711
SAF4	0.625	0.563	0.569	0.604	0.582	0.521	0.589	0.840	0.538	0.636
SQ1	0.522	0.586	0.500	0.522	0.607	0.523	0.558	0.575	0.900	0.642
SQ2	0.608	0.623	0.585	0.586	0.668	0.550	0.644	0.668	0.903	0.692
SQ3	0.596	0.667	0.591	0.596	0.608	0.560	0.648	0.628	0.930	0.663
SQ4	0.595	0.686	0.589	0.599	0.633	0.557	0.662	0.634	0.932	0.674
SQ5	0.580	0.666	0.598	0.573	0.638	0.582	0.647	0.630	0.930	0.701
USAT1	0.659	0.676	0.753	0.669	0.746	0.690	0.758	0.820	0.685	0.917
USAT2	0.629	0.715	0.729	0.657	0.773	0.653	0.741	0.758	0.696	0.932
USAT3	0.629	0.725	0.690	0.605	0.777	0.602	0.774	0.714	0.703	0.936
USAT4	0.412	0.568	0.428	0.387	0.603	0.381	0.514	0.464	0.484	0.731

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.1.2 Reliability

The reliability of a scale refers to its ability to consistently produce similar results across multiple measurements. Internal consistency is considered reliable when the items of a scale effectively interact with each other, yielding values that meet or exceed an acceptable mean. Cronbach's Alpha (CA) test is a commonly used method to assess internal consistency, typically ranging between 0.6 and 0.7 for acceptable reliability and 0.7 or above for satisfactory reliability (Hair et al., 2022). Looking at the CA values for the constructs; amenities (0.856), comfort (0.917), facility aesthetics (0.959), layout (0.852), physical (0.847), safety (0.918), service quality (0.954), users' satisfaction (0.903), loyalty (0.948), and reuse intention (0.951), each item in the scale exhibited a CA value surpassing the 0.70 threshold, indicating satisfactory and consistent reliability. The results of the construct reliability assessment were presented in Table 4.4.

Table 4.4: Construct's Reliability

Construct	Cronbach's alpha	Composite reliability
AME	0.856	0.895
COMF	0.917	0.938
FA	0.959	0.966
LAY	0.852	0.903
LOY	0.948	0.960
PHY	0.847	0.897
RUI	0.951	0.965
SAF	0.918	0.942
SQ	0.954	0.964
USAT	0.903	0.934

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.1.3 Convergent Validity

Upon assessing the loadings, average variance extracted (AVE) and the composite reliability (CR) were computed to assess the measurement model. In this section, convergent

validity can be measured using AVE, which is the mean percentage variation for a latent construct as determined by the measuring items. Both the CR and AVE were obtained using the standard factor loading values for each scale determined in the preceding section. For the scale to be considered valid and reliable, the CR should be greater than 0.7 and the minimum cut off value for the AVE should be more than 0.5 (Hair et al., 2022). Table 4.5 presented the CR's values for amenities at 0.895, comfort at 0.938, facility aesthetics at 0.966, layout at 0.903, service quality at 0.964, physical at 0.897 and safety at 0.942. Additionally, CR values for users' satisfaction, loyalty and reuse intention were 0.934, 0.960 and 0.965 respectively. With high composite reliability between 0.895 to 0.966, the indicators of each construct can measure the represented latent variable. Prior to that, it can be derived that the internal consistency of the measuring items for the constructs was satisfactory.

Hair et al. (2022) stated the commonly used rule of thumb for the square root of AVE values for each construct should be greater than 0.7 or 0.8, though some researchers suggest a minimum threshold of 0.5 or 0.6 to achieve convergent validity. As shown in Table 4.5 below under AVE's column, amenities had an AVE of 0.593, comfort was 0.753, facility aesthetics was 0.801, layout was 0.703, service quality was 0.844, physical was 0.686 and safety displayed AVE of 0.803. Moreover, AVE's values for users' satisfaction was 0.785, loyalty was 0.856 and reuse intention was 0.889. In general, AVE for the constructs range from 0.593 to 0.872 which were well above the recommendation value. Since every indicator exceeded the threshold of 0.5, it meant that there was no issue with convergent validity.

Table 4.5: Measurement of the Model

Construct	Item	Loading	CR	AVE
Amenities			0.895	0.593
	Amenities 1	0.820		
	Amenities 2	0.591		
	Amenities 3	0.832		

Table 4.5 continued

	Amenities 4	0.878		
	Amenities 5	0.875		
	Amenities 6	0.557		
Comfort			0.938	0.753
	Comfort 1	0.888		
	Comfort 2	0.928		
	Comfort 3	0.855		
	Comfort 4	0.885		
	Comfort 5	0.775		
Facility Aesthetics			0.966	0.801
	Facility Aesthetics 1	0.848		
	Facility Aesthetics 2	0.874		
	Facility Aesthetics 3	0.894		
	Facility Aesthetics 4	0.904		
	Facility Aesthetics 5	0.897		
	Facility Aesthetics 6	0.917		
	Facility Aesthetics 7	0.929		
Layout			0.903	0.703
	Layout 1	0.864		
	Layout 2	0.626		
	Layout 3	0.900		
	Layout 4	0.929		
Loyalty			0.960	0.829
	Loyalty 1	0.899		
	Loyalty 2	0.834		
	Loyalty 3	0.911		
	Loyalty 4	0.954		
	Loyalty 5	0.950		
Physical			0.897	0.686
	Physical 1	0.812		
	Physical 2	0.895		
	Physical 3	0.778		
	Physical 4	0.825		
Reuse Intention			0.965	0.872
	Reuse Intention 1	0.911		
	Reuse Intention 2	0.919		
	Reuse Intention 3	0.965		
	Reuse Intention 4	0.940		
Safety			0.942	0.803
	Safety 1	0.904		
	Safety 2	0.927		
	Safety 3	0.912		
	Safety 4	0.840		

Table 4.5 continued

Service Quality			0.964	0.844
	Service Quality 1	0.900		
	Service Quality 2	0.903		
	Service Quality 3	0.930		
	Service Quality 4	0.932		
	Service Quality 5	0.930		
Users' Satisfaction			0.934	0.780
	Users' Satisfaction 1	0.917		
	Users' Satisfaction 2	0.932		
	Users' Satisfaction 3	0.936		
	Users' Satisfaction 4	0.731		

Notes: CR = Composite Reliability, AVE = Average Variance Extracted

4.5.1.4 Discriminant Validity

Discriminant validity is expressed when a construct is essentially different from other constructs. It means that a construct is distinct from other model constructs (Hair et al., 2022). In consideration of Fornell and Larcker criterion to test discriminant validity, the AVE for each construct is compared to the square root of the correlations between that construct and all other constructs in the model. If the construct square root for AVE surpasses the squared correlation among the constructs, the construct discriminant validity is satisfied (Fornell & Larcker, 1981). Table 4.6 highlighted the Fornell Larcker's test result, construct of facility aesthetics (0.895) which was bolded under the third row had higher value as compared to the other constructs within the same row at 0.717 and 0.645. Similarly, within the same column, it was notable that the correlations between facility aesthetics and layout, loyalty, physical, reuse intention, safety, service quality, and users' satisfaction were observed as 0.729, 0.688, 0.761, 0.693, 0.669, 0.624, and 0.749, respectively. This demonstrated AVE for the construct was strongly related to its own indicators than to any other indicators from other constructs. Also, square roots of AVE results were shown for amenities (0.770), comfort (0.868), layout (0.838), loyalty (0.911), physical (0.828), safety

(0.896), service quality (0.919) and users' satisfaction (0.883). As each of these values exceeded the corresponding correlations along the diagonal rows and columns in the correlation matrix, all the constructs achieved satisfactory discriminant validity.

Table 4.6: Fornell – Larcker Test

	AME	COMF	FA	LAY	LOY	PHY	RUI	SAF	SQ	USAT
AME	0.770									
COMF	0.635	0.868								
FA	0.717	0.645	0.895							
LAY	0.761	0.609	0.729	0.838						
LOY	0.667	0.670	0.688	0.664	0.911					
PHY	0.743	0.608	0.761	0.745	0.601	0.828				
RUI	0.632	0.605	0.693	0.612	0.809	0.573	0.934			
SAF	0.662	0.716	0.669	0.674	0.662	0.622	0.628	0.896		
SQ	0.632	0.703	0.624	0.627	0.687	0.604	0.688	0.683	0.919	
USAT	0.669	0.763	0.749	0.668	0.825	0.671	0.798	0.793	0.735	0.883

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

This study also used the Heterotrait-Monotrait (HTMT) ratio test for assessment and establishment of discriminant validity. The HTMT is a more reliable test for discriminant validity to measure the similarity of one latent variable to another, whereby the value must be less than 0.9 to establish discriminant validity (Henseler et al., 2015b). As shown in Table 4.7 below, all values of the constructs met the HTMT test threshold of less than 0.9. Hence, it can be concluded discriminant validity was satisfied and the measurement model is illustrated in Figure 4.1.

Table 4.7: HTMT

	AME	COMF	FA	LAY	LOY	PHY	RUI	SAF	SQ	USAT
AME										
COMF	0.718									
FA	0.773	0.676								
LAY	0.880	0.686	0.799							
LOY	0.715	0.712	0.716	0.729						
PHY	0.859	0.685	0.840	0.885	0.665					

Table 4.7 continued

RUI	0.671	0.640	0.724	0.671	0.847	0.631			
SAF	0.745	0.770	0.710	0.758	0.705	0.696	0.673		
SQ	0.697	0.745	0.649	0.700	0.718	0.667	0.722	0.728	
USAT	0.737	0.832	0.791	0.746	0.887	0.752	0.854	0.857	0.785

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

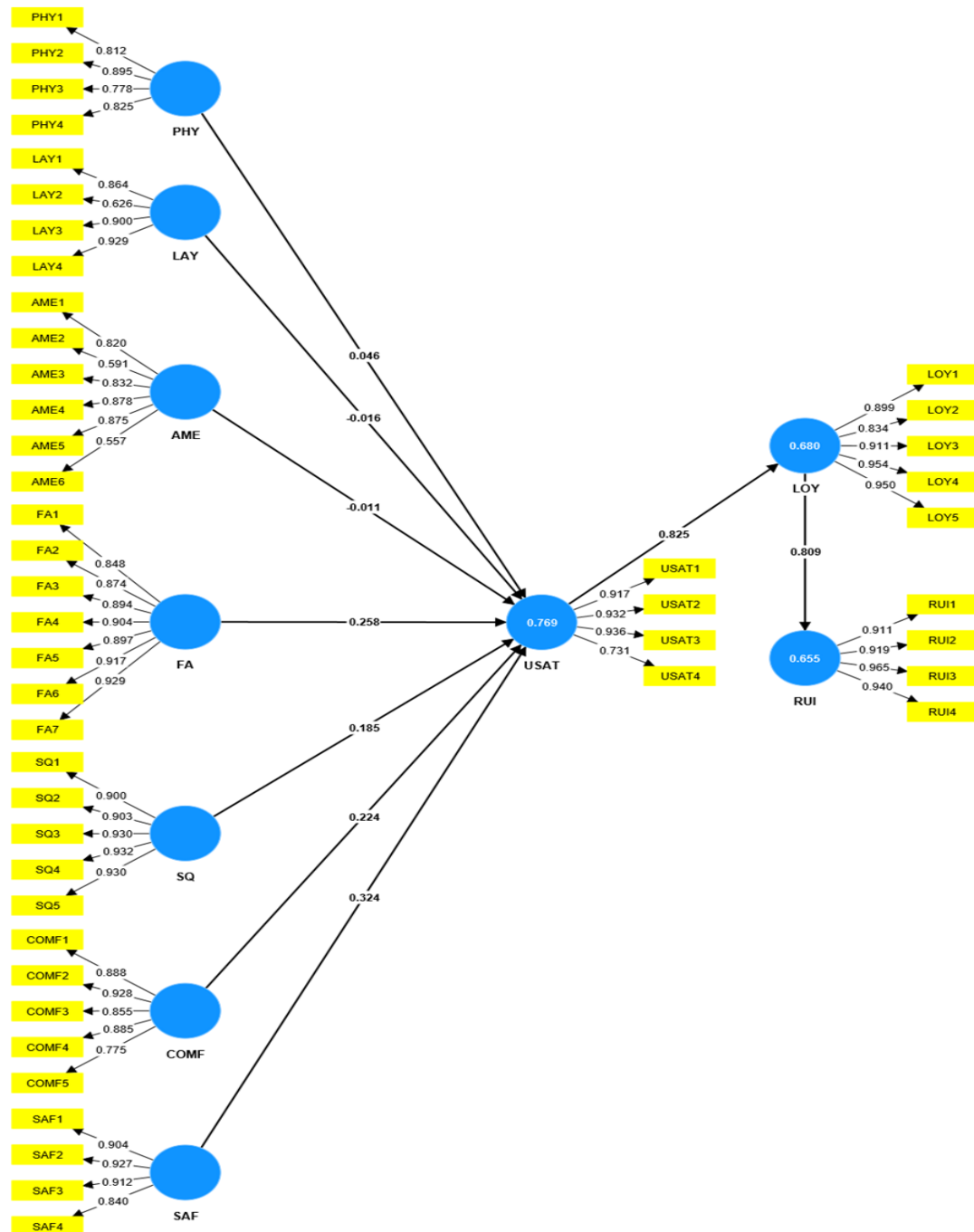


Figure 4.1: Measurement Model

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2 Structural Model

After confirming the outcomes of the measurement model, the subsequent step requires analysing the structural model. This phase involves assessing the model's predictive capacity and the relationships among constructs. Key evaluation metrics for the structural model in PLS-SEM include examining collinearity of the inner model, the significance of path coefficients, the level of R^2 coefficients, effect size (f^2), and predictive relevance (Q^2).

4.5.2.1 Multicollinearity Analysis for Inner Model

The structural model was examined for potential collinearity issues. In the previous sections, the measurement items for the first orders were examined in terms of reliability, convergent, and discriminant validity of the constructs. To validate the second-order model of sports service environment (i.e., amenities, physical, facility aesthetics, comfort, service quality, layout, and safety) as well as users' satisfaction, loyalty and reuse intention, the collinearity assessment was done to get significance test and the results of the inner model variance inflation factor (VIF) for the constructs. Findings were presented in Table 4.8.

Atoyebi and Obilade (2024) described multicollinearity as a phenomenon in which two or more independent variables in a multiple regression model are extremely associated. Therefore, VIF can be used to assess the extent of multicollinearity among predictor variables within the model and can also be applied to measure collinearity among each indicator within a construct. However, in the reflective model used in this study, the outer VIF values were not included (Hair et al., 2022). Two common methods of detecting multicollinearity are by checking the variance inflated factor (VIF) and tolerance of the

predictor variables. According to Dam and Dam (2021), VIF values should be less than 5. Results indicated all the inner model constructs had a value for VIF less than 5, whereby VIF values for amenities as predictor of users' satisfaction was 3.179, comfort as predictor of users' satisfaction was 2.663, facility aesthetics as predictor of users' satisfaction was 3.146, layout as predictor of users' satisfaction was 3.247, physical as predictor of users' satisfaction was 3.196, safety as predictor of users' satisfaction was 2.789, service quality as predictor of users' satisfaction was 2.469, users' satisfaction as predictor of loyalty was 1.000, and loyalty as predictor of reuse intention was 1.000. These suggested the constructs within the structural model were not problematic and valid. On the other hand, tolerance values below 0.2 generally indicate problematic multicollinearity (Hair et al., 2022). In the results, all tolerance achieved values more than the cut-off of 0.2, meaning there is no collinearity issue. Since the focus is on the relationships among the variables in the structural model, hence, there is no issue with multicollinearity, as none of the variables was eliminated.

Table 4.8: Variance Inflation Factor Test

	Tolerance	VIF
AME -> USAT	0.31	3.179
COMF -> USAT	0.38	2.663
FA -> USAT	0.32	3.146
LAY -> USAT	0.31	3.247
LOY -> RUI	1.00	1.000
PHY -> USAT	0.31	3.196
SAF -> USAT	0.36	2.789
SQ -> USAT	0.41	2.469
USAT -> LOY	1.00	1.000

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2.2 Path Coefficient

Having established adequate reliability, validity, and collinearity of the constructs in the proposed model, the next step was to assess all relationships in the model and the path coefficients. In this step of the structural model, the assessment procedure involved assessing the significance and relevance of the structural model relationships as shown in Table 4.9. Path coefficient represents the strength of the relationships, with path coefficient close to +1 or -1 indicate strong relationship, whilst estimated coefficient close to 0 shows weaker relationship. Looking at the relative importance of the driver constructs for the user's satisfaction, the results suggest that the customers' perception of the safety is most important with a score of 0.324, followed by its facility aesthetics at value of 0.258, comfort at 0.224, and service quality at 0.185. In contrast, the physical, layout, and amenities have very little bearing on users' satisfaction, having values of 0.046, 0.016 and 0.011 respectively. On the other hand, the increased importance for establishing loyalty was indicated with a high users' satisfaction path coefficient value of 0.825. Exploring the model further, it was also identified that loyalty had significant path coefficient value of 0.809 towards reuse intention (RUI).

Table 4.9: Path Coefficient

	AME	COMF	FA	LAY	LOY	PHY	RUI	SAF	SQ	USAT
AME										-0.011
COMF										0.224
FA										0.258
LAY										-0.016
LOY							0.809			
PHY										0.046
RUI										
SAF										0.324
SQ										0.185
USAT										0.825

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2.3 Bootstrapping

Bootstrapping stands as a versatile and useful statistical technique that enhances the resilience and reliability of research outcomes, particularly in scenarios involving intricate data, limited sample sizes, or instances where conventional assumptions regarding data distribution are not applicable (Nadella, 2023). To assess whether these relationships were significant, the bootstrapping process was performed. Bootstrapping was carried out with subsamples of 5000, setting the parameter for amount of result at most important (faster), with a confidence interval method of percentile bootstrap, one tailed and significance level of 0.05. Table 4.10 shows the bootstrapping results for the path coefficient and recommended hypotheses of the study's model.

4.5.2.4 Hypothesis Testing

Following the assessment of the measurement model, the next step was the evaluation of path coefficients relationships among the study constructs and their statistical significance. After performing a Bootstrapping analysis, the resulting path analysis indicated the path coefficients and p-values for each relationship. Therefore, all hypotheses had been evaluated simultaneously through the PLS - SEM technique via SMART PLS 4.0 software. The results of the hypotheses testing can be seen in Table 4.10 and Figure 4.2 reflects the path coefficient and p-values of the structural model.

H1: Physical aspects of the facility are positively related to users' satisfaction.

H1 evaluated whether physical condition of the sports facility significantly and positively affects users' satisfaction. Considering a significance level ($\alpha = 0.05$), the results revealed that physical aspect did not have a statistically significant impact on users'

satisfaction ($t = 0.696$, $p = 0.243$). However, there was a modest positive relationship between physical and users' satisfaction ($B = 0.046$). As such, H1 was not supported.

H2: Layout is positively related to users' satisfaction.

H2 evaluated whether layout of the sports facility significantly and positively affects users' satisfaction. Setting a significance level ($\alpha = 0.05$), the results statistically revealed that layout factor did not have a significant influence on users' satisfaction ($t = 0.198$, $p = 0.422$). Interestingly, the finding appeared to have a small negative relationship between layout and users' satisfaction as opposed to the anticipated positive relationship ($B = -0.016$). Hence, H2 was not supported.

H3: Amenities are positively related to users' satisfaction.

H3 examined whether amenities of the sports facility significantly and positively affect users' satisfaction. The results revealed that amenities factor did not have a statistically significant impact on users' satisfaction ($t = 0.147$, $p = 0.442$) at a significant level, $\alpha = 0.05$. On the other hand, a slight negative relationship was observed between amenities and users' satisfaction as opposed to the anticipated positive relationship ($B = -0.001$). Therefore, H3 was not supported.

H4: Facility aesthetics is positively related to users' satisfaction.

The hypothesis, H4 evaluated whether facility aesthetics of the sports facility significantly and positively affect users' satisfaction with a predefined significance level ($\alpha = 0.05$). The results showed that facility aesthetics factor did have a statistically significant and positive impact on users' satisfaction ($B = 0.258$, $t = 3.336$, $p = 0.000$). Thus, H3 was supported.

H5: Service quality is positively related to users' satisfaction.

H5 explored whether service quality of the sports facility significantly and positively affects users' satisfaction. With a predefined significance level ($\alpha = 0.05$), the results indicated that service quality factor aspect had a statistically significant and positive impact on users' satisfaction ($B = 0.185$, $t = 1.955$, $p = 0.025$). Hence, this hypothesis was supported.

H6: Comfort is positively related to users' satisfaction.

Hypothesis 6 assessed if comfort of the sports facility significantly and positively influences users' satisfaction. using a predefined significance level ($\alpha = 0.05$). The findings revealed a statistically significant and positive effect of comfort factor on users' satisfaction ($B = 0.224$, $t = 2.970$, $p = 0.001$). Thus, H6 was supported.

H7: Safety is positively related to users' satisfaction.

By using significant level, $\alpha = 0.05$, H7 investigated whether safety of the sports facility can significantly and positively impact users' satisfaction. The analysis demonstrated a statistically significant and positive influence of the safety aspect on users' satisfaction ($B = 0.324$, $t = 4.439$, $p = 0.000$). Therefore, this hypothesis was supported.

H8: Users' satisfaction is positively related to loyalty.

H8 examined the impact of users' satisfaction on loyalty, exploring whether users' satisfaction significantly and positively affects loyalty with a predefined significance level ($\alpha = 0.05$). The analysis revealed a statistically significant and positive relationship between users' satisfaction and loyalty ($B = 0.825$, $t = 25.787$, $p = 0.000$), indicating that H8 was supported.

H9: Loyalty is positively related to reuse intention.

H9 explored if loyalty significantly and positively affects reuse intention based on a predefined significance level ($\alpha = 0.05$). The empirical findings showed a statistically significant and positive correlation, indicating loyalty factor aspect had an influence on reuse intention ($B = 0.809$, $t = 19.725$, $p = 0.000$), thereby confirming the support for H9.

Table 4.10: Assessment of Path Coefficients and Hypotheses

Hypothesis	Relationship	Beta Value	t-value	P values	Decision
H1	Physical aspects of the facility are positively related to users' satisfaction.	0.046	0.696	0.243	Not Supported
H2	Layout is positively related to users' satisfaction.	-0.016	0.198	0.422	Not Supported
H3	Amenities are positively related to users' satisfaction.	-0.011	0.147	0.442	Not Supported
H4	Facility aesthetics is positively related to users' satisfaction.	0.258	3.336	0.000	Supported
H5	Service quality is positively related to users' satisfaction.	0.185	1.955	0.025	Supported
H6	Comfort is positively related to users' satisfaction.	0.224	2.970	0.001	Supported
H7	Safety is positively related to users' satisfaction.	0.324	4.439	0.000	Supported
H8	Users' satisfaction is positively related to loyalty.	0.825	25.787	0.000	Supported
H9	Loyalty is positively related to reuse intention.	0.809	19.725	0.000	Supported

Note: $p < 0.05$ (predefined significance level)

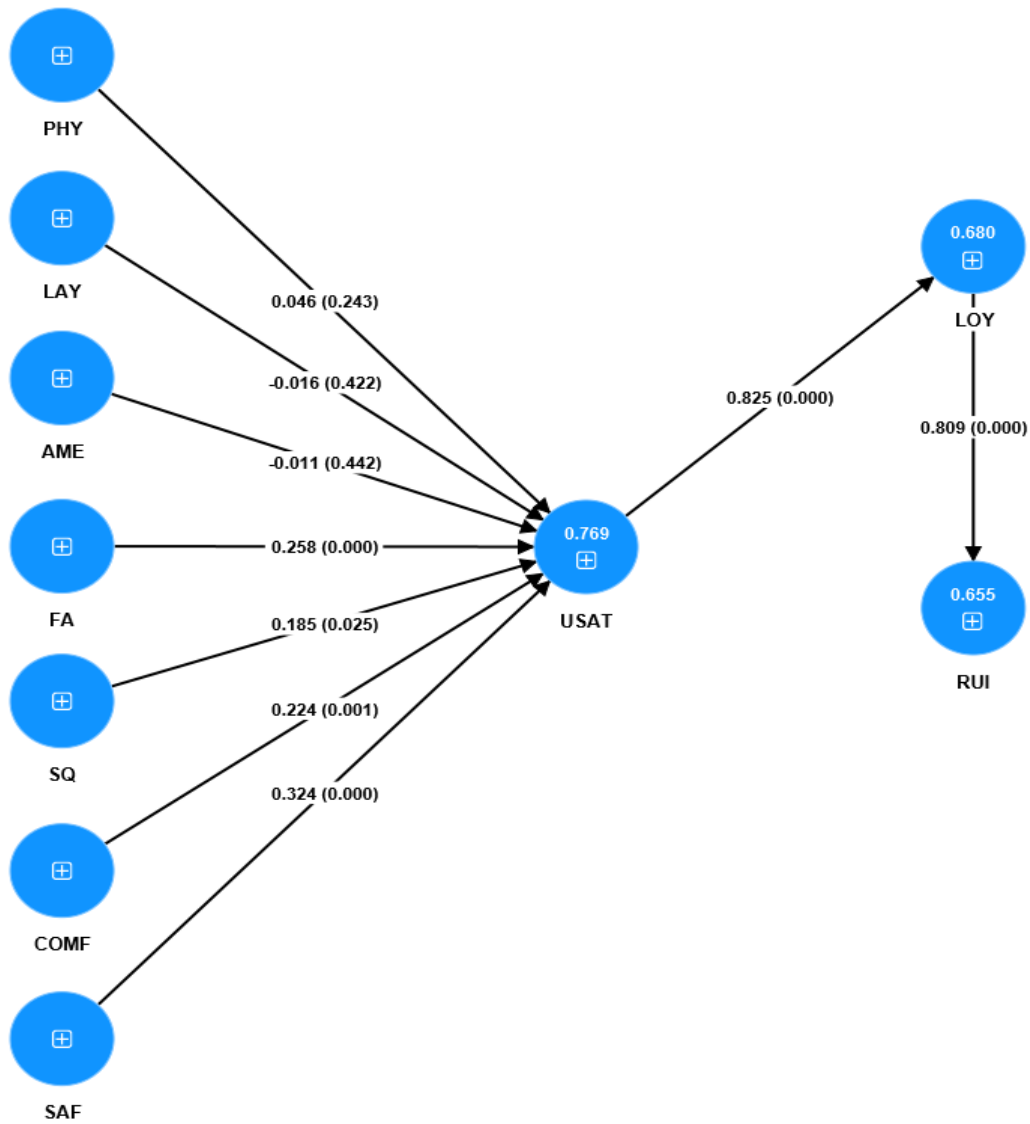


Figure 4.2: Construct's Path Coefficient and p-values of the Structural Model

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2.5 Coefficients of Determination (R^2) and Predictive Relevance (Q^2)

R^2 statistics explains the variance in the endogenous variable explained by the exogenous, meaning how much change in the dependent variable can be accounted by the one of more independent variables. In the assessment, the users' satisfaction was influenced by amenities, comfort, facility aesthetics, layout, physical, safety and service quality. Furthermore, loyalty was evaluated by users' satisfaction, whilst loyalty R^2 value towards

reuse intention was determined. As recommended by Chin (1998), R^2 values for observed variables can be categorised into substantial (0.67), moderate (0.33), or weak (0.19).

Accordingly, the result for users' satisfaction value was 0.769, loyalty was 0.680, and reuse intention was 0.655 as shown in Table 4.11. This indicated that a 76.9% change in users' satisfaction can be influenced by factors of amenities, comfort, facility aesthetics, layout, physical, safety and service quality. On another note, a change of 68.0% in loyalty can be influenced by users' satisfaction whereas 65.5% change in reuse intention was attributed by loyalty. Since the values for users' satisfaction and loyalty were more than 0.67, both endogenous variables were substantial, whereas the slightly lower value of reuse intention, falling below 0.67 was considered moderate.

Q^2 measures whether a model has predictive relevance or otherwise, as value more than 0 shows well established for the endogenous variables in the model. By running blindfolding analysis in the SMART PLS, as indicated in Table 4.11, users' satisfaction, loyalty, and reuse intention had predictive relevance values of 0.585, 0.557 and 0.566, which were well above 0, indicating the existence of strong predictive relevance in the model constructs.

Table 4.11: Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

Constructs	R-square	Predictive Relevance
AME		
COMF		
FA		
LAY		
LOY	0.680	0.557
PHY		
RUI	0.655	0.566
SAF		
SQ		
USAT	0.769	0.585

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ =

Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2.6 Effect Size (f^2)

After assessing the R^2 and Q^2 , the next step was to assess the effect size. The rule of thumb for f^2 effect size is value equal or more than 0.02 is considered small, equal or more than 0.15 is medium and equal or more than 0.35 is large (Cohen, 1988). Specifically, it can be evaluated how strongly each of the seven formative driver constructs (amenities, comfort, facility aesthetics, layout, physical, safety and service quality) ultimately influences the key target variables of loyalty and reuse intention.

Effect sizes are shown under Table 4.12 in the result's report. Each column represents a target construct, whereas the rows represent predecessor constructs. For example, with regards to users' satisfaction, among the seven exogenous driver constructs, safety had the strongest effect size on users' satisfaction f^2 value at 0.163, followed by facility aesthetics at 0.091, comfort at 0.081 and service quality at 0.06, whereas f^2 values for other remaining exogenous variables, physical was 0.003, layout was 0.000, and amenities at 0.000. It can be implied that safety has medium effect size, while facility aesthetics, comfort, and service quality constructs effect size all fall within the small to medium range. On the other hand, layout, physical and amenities were considered having no effect on users' satisfaction and are insignificant. For loyalty and reuse intention, both had significant large effect sizes of more than 0.35, at 2.125 and 1.895 respectively.

Therefore, it is advisable for the sports service provider to prioritise improvements in amenities, layout and physical aspects that could positively influence the users' perception of the quality of the facilities and services.

Table 4.12: Effect Sizes (f^2)

	LOY	RUI	USAT	Effect Size
AME			0.000	None
COMF			0.081	Small
FA			0.091	Small
LAY			0.000	None
LOY		1.895		Large
PHY			0.003	None
SAF			0.163	Medium
SQ			0.060	Small
USAT	2.125			Large

Note: PHY = Physical, LAY = Layout, AME = Amenities, FA = Facility Aesthetics, SQ = Service Quality, COMF = Comfort, SAF = Safety, USAT = Users' Satisfaction, LOY = Loyalty, RUI = Reuse Intention

4.5.2.7 Model Fit

In PLS-SEM, the standardised root mean square residual (SRMR) is used to test the goodness of fit criterion with a value of less than 0.08 to consider the model a good fit. SRMR is defined as a measure used to determine the model fit but questionable in PLS-SEM analysis (Hair et al., 2022). The values for SRMR ranges from 0 to 1. The lower the value the better fit. Based on Table 4.12, the values obtained in this study for estimated model (0.084) was slightly above the threshold and hence the model can be considered as a decent model fit.

Table 4.13: SRMR Estimates

	Saturated model	Estimated model
SRMR	0.067	0.084

4.6 Summary

In this chapter, the results had been analysed. To recap, the chapter outlined the assessment of the model's reliability and validity, as well as hypotheses testing, which

confirmed the measurement and structural aspects of the study model. Most importantly, the study evaluated the relationships between the model's constructs and tested nine primary hypotheses. From the analyses, the findings showed six out of nine hypotheses (H4, H5, H6, H7, H8 and H9) were supported whereas H1, H2 and H3 were not supported. In the subsequent chapter, the results of the hypotheses will be discussed, addressing any limitations, while also exploring the theoretical and practical implications arising from the research outcomes. Furthermore, recommendation for future research directions will also be provided.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

This study was aimed to offer a comprehensive understanding of the relationship between the sports service environment, users' satisfaction, loyalty, and reuse intention in public sports facilities in Sarawak. Ultimately, the purpose of the research was to investigate the effects of sports service environment towards users' satisfaction, the implication of users' satisfaction on loyalty as well as how loyalty affects the reuse intention. The first specific objective was to evaluate the impact of essential service environment attributes (i.e., physical, layout, amenities, facility aesthetics, service quality, comfort, and safety) on users' satisfaction in public sports facilities in Sarawak. Secondly, the study also intended to identify the relationship between users' satisfaction and loyalty in public sports facilities in Sarawak. In addition, the third goal was to explore the effect of loyalty on reuse intention towards public sports facilities in Sarawak. These objectives were outlined to address the research questions in this study. There were three research questions, which are: "Will users' satisfaction be influenced by public sports facilities service environment attributes (i.e., physical, layout, amenities, aesthetics, service quality, comfort, and safety) in Sarawak?", "Will users' satisfaction in public sports facilities affect loyalty in Sarawak?", and "Will users' loyalty in public sports facilities affect user's reuse intention in Sarawak?". The sports service environment consisted of physical, layout, amenities, facility aesthetics, service quality, comfort, and safety, which were treated as independent variables for examining their influence on users' satisfaction. Users' satisfaction, in turn, served as the independent

variable to assess loyalty. Furthermore, loyalty was considered the independent variable to determine its relationship with reuse intention.

Building upon the insights gained from the preceding findings outlined in Chapter 4, this section thoroughly explored a comprehensive discussion of the results and their implications from both theoretical and practical perspectives. Recommendations for future research were then provided, along with its limitations, and conclusion for this study.

5.2 Discussion

The results of these analyses, derived critically from the path coefficient and hypotheses testing unveiled insights pertaining to previous research. Notably in this study, the composition of sports service environment; physical aspects, layout, amenities, facility aesthetics, service quality, comfort and safety were collectively designed as the essential constructs in relation to the users' satisfaction. With this in mind, to date, no known studies have incorporated all these dimensions to evaluate the effects towards users' satisfaction, and subsequently assessing the loyalty and the consequent impact on reuse intention under a study model from the context of Sarawak's public sports facilities. Whilst the lack of empirical comprehension on this research clearly undermines the progression of sports development, the findings from the research could spearhead the advancement of public sports facilities in Sarawak, not merely from the management viewpoint but encouraging increase usage among the users. There were nine hypotheses tested in the proposed model, with six of the hypotheses supported while the remaining three hypotheses reflected contradictory results that need further elaborations.

5.2.1 Physical and Users' Satisfaction

The research hypothesis H1 was to evaluate if the physical aspect is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis contributed to address the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (physical) in Sarawak?

In light of the proposed hypothesis, past studies such as Şahiner (2016) and Berens (1997) emphasised the importance of factors such as furniture orientation and density in shaping customers' perceptions of the physical environment. Similarly, Moura e Sá and Cunha (2019) highlighted the significance of cleanliness and well-maintained equipment in creating a welcoming atmosphere in sports facilities. These findings suggested that users value certain aspects of the physical environment, which may contribute to their overall satisfaction. Additionally, research by Yitbarek et al. (2017) indicated that spectators reported positive experiences related to venue cleanliness and Lam et al. (2011) put forth the profound influence of the physical environment on the consumption experience, particularly in leisure settings.

Interestingly, the findings for the hypothesis, H1 investigated the impact of the physical condition of sports facilities on users' satisfaction, revealed results that were unexpected based on the existing literature. While the statistical analysis did not demonstrate a statistically significant impact of the physical aspect on users' satisfaction, a modest positive relationship was observed. These results indicated that the hypothesised relationship between the physical condition of sports facilities and users' satisfaction was not supported. Several factors could have influenced these findings, such as the subjective nature of the physical condition assessment that relied on user perceptions rather than objective criteria. Moreover, users' expectations, previous experiences, and particular preferences of the facility might have influenced their satisfaction ratings, resulting in the observed outcomes.

This finding drew similar conclusions in previous research. For instance, Tuan and Linh (2014) observed a lack of significant correlation between the physical evidence of hotels and customer satisfaction, suggesting that the notion of increasing physical evidence to enhance satisfaction may not hold true. Additionally, Minh et al. (2015) echoed the outcome, indicating that customers do not perceive the physical evidence of a hotel as a distinguishing factor when selecting accommodations. In line with Marlina et al. (2019)'s research outcomes, this study similarly produced a lack of significant correlation between the physical attributes of the courier facility and users' satisfaction. This was evident in Padlee et al. (2019) and Hussain et al. (2019) investigations on the relationship between physical and satisfaction within the hospitality sector, as similar insignificance was reported.

The majority of the respondents (48.1%) are employed in the government sector, thus physical aspects of the facility may not be of much concern to them as most of them might perceive physical condition as irrelevant to their satisfaction. Understandably, users may also find it quite negligible in terms of physical condition of facilities, especially if it is a public facility in comparison to private sports facilities where the level of expectation would be higher (Martínez-Tur et al., 2001). It can also be observed that non-physical aspects such as safety bears a substantial preference over physical in determining their level of satisfaction, followed by facility aesthetics and comfort respectively. This implies the users' demand in the public sports facilities may have shifted, valuing instead on experiencing a secure environment, pleasant looking structure, comfort and service efficiency. Nonetheless, the physical dimension cannot be completely ignored as other studies have proven otherwise, hence more studies are necessary to explore further.

5.2.2 Layout and Users' Satisfaction

The research hypothesis H2 was to evaluate if the layout is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis contributed to address the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (layout) in Sarawak?

Contrary to expectations, the analysis revealed that the layout of the sports facility did not significantly influence users' satisfaction, with a slight negative relationship observed. The finding deviated from past research and clearly requires a closer examination of the underlying factor. Taking into consideration the facility planning and design, past literature suggested that an effective layout would enhance users' satisfaction by improving accessibility and navigation. However, Rutes et al. (2001) emphasised that clustering facilities around the lobby for easy access may not always translate to increased satisfaction if other design elements or operational constraints are overlooked. Another consideration is the perception of crowding or spaciousness within the facility, which can be influenced by internal layouts. Aubert-Gamet (1997) demonstrated that the design and arrangement of spaces can impact users' satisfaction. Besides, Filingeri et al. (2017) added that the configuration and arrangement layout of facilities, pathways, and available space within a venue have been acknowledged as key influencers on the crowd's overall experience. However, in the current study, the layout may not have effectively addressed users' spatial preferences or contributed positively to their satisfaction. Furthermore, Thapa (2007) highlighted the importance of the servicescape layout in fulfilling customers' pleasure needs, implying that an interesting and effective layout could enhance the overall experience. Following a study by Lee and Kim (2014) in public service facilities, layout was also shown to have an impact towards the satisfaction among customers.

However, the study's results contradicted this expectation, revealing no relationship between layout and users' satisfaction. In supporting this finding, Ioannou and Bakirtzoglou (2016) also stated the satisfaction level was not significantly influenced by the layout accessibility for a study related to stadium venue. This discrepancy may be due to reason of familiarity among the respondents with the facilities. Looking at the demographic profile of the respondents, 43.8% have visited or used the sports facilities in the last month, indicating that the accessibility or way finding within the sports facilities might not be a concern for them. Besides, respondents may have completed the survey once they left the sports facilities, by then they would have known quite well with the surroundings within the sports facilities. Another consideration to take note would be the trend among the users may have changed to a more service-oriented preference rather than focusing on the physical and functional quality of the sports facilities. From the context of this study, safety, aesthetic and service quality demands were rated essential by the respondents. Phonthanukitithaworn and Sellitto (2018) also pointed out the users of the sports facilities may be too engaged and entertained with the core sports activities and may disregard the layout accessibility importance. Such insignificant relationship was also reported in Biscaia et al. (2013)'s study, whereby layout had no effect towards satisfaction. Moreover, the current study may have reflected the results based on existing perception of users in Sarawak, as compared to the previous research being carried out at other regions from a different cultural background. This could be the rationale behind the contrasting result.

5.2.3 Amenities and Users' Satisfaction

The research hypothesis H3 was to evaluate if the amenities are positively related to users' satisfaction. Based on the report of the main findings, the hypothesis contributed to

address the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (amenities) in Sarawak?

According to Baud-Bovy and Lawson (1998), amenities refer to facilities and services provided to visitors to fulfil their needs during their stay at a destination. These amenities play a crucial role in meeting tourists' expectations and enhancing their overall satisfaction (Hermawan et al., 2019). Mohamad et al. (2022) found that visitors in recreational facilities prioritised the availability of quality amenities, particularly emphasising the importance of clean and well-maintained prayer rooms and toilets. Therefore, amenities are traditionally regarded as fundamental contributors to visitor satisfaction (Soebiyantoro, 2009). However, the analysis indicated that amenities did not have a statistically significant impact on users' satisfaction. Moreover, a slight negative relationship was observed between amenities and users' satisfaction, which contradicted the anticipated positive relationship. This outcome diverged from established literature on the significance of amenities in shaping users' experiences and satisfaction.

The disparity between amenities and satisfaction observed in the study could be attributed to the amenities not closely aligning with users' preferences or expectations. This might occur because users primarily visit sports facilities for specific activities, such as watching a football match or relaxing at the swimming pool, and may not pay much attention to the amenities provided. Consequently, users may overlook the quality of amenities offered during their visit, focusing more on their main activities rather than assessing the available amenities. This aligned with Papadimitriou (2013)' findings who also found that the perceived quality of festival amenities did not significantly impact satisfaction. The lack of significant relationship suggests that users are more focused on the core attractions and entertainment opportunities provided during sports activities. It is also likely they might pay

less attention to the standard amenities or viewed them as merely meeting expected quality levels.

The absence of a significant relationship between amenities and users' satisfaction in this study aligned with Febinanda et al. (2018)'s findings, suggesting that insufficient amenities may result in dissatisfaction among tourists. This suggests that, similar to tourist destinations, the quality and quantity of amenities provided at sports facilities play a crucial role in determining users' satisfaction. Notably too, identical pattern of partial amenities insignificance on satisfaction was identified in the tourism sector in Indonesia (Surya & Ningsih, 2020). Another study conducted by Rini (2023) exploring the influence of facilities on tourist satisfaction similarly reported insignificant results. It can also be pointed out in this research, as the sports facilities only offer basic amenities and lacking stand out equipment to satisfy users, therefore it had no effect on their satisfaction. When amenities fail to meet users' expectations or do not provide unique or exceptional features, they may not significantly influence users' satisfaction.

5.2.4 Facility Aesthetics and Users' Satisfaction

The research hypothesis H4 was to evaluate if the facility aesthetics is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis contributed to address the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (facility aesthetics) in Sarawak?

The PLS-SEM results of this study revealed a statistically significant positive impact of facility aesthetics on users' satisfaction within the public sports environment. The correlation coefficient findings further supported this, indicating a strong association between improved aesthetics of sports facilities and enhanced users' satisfaction. These

findings were consistent with previous research in both leisure sports (Lee, 2003; Son et al., 2018) and competitive sports (Greenwell et al., 2002; Phonthanukitithaworn & Sellitto, 2018; OZRudi, 2022), which identified aesthetics as a positive predictor of satisfaction. Moreover, Şahiner (2016) highlighted concerns regarding design factors, particularly aesthetics and layout accessibility, within the hotel lobby's environment. Similarly, Thapa (2007) found that exquisitely designed interior-scaping tends to evoke positive customer satisfaction and favourable overall evaluations of visually attractive environments. In the context of sports facility design, the importance of aesthetics cannot be underestimated. Relevant research by Alizadeh and Cobuliev (2022) emphasised the positive relationship between aesthetics and attracting individuals to engage in sporting activities. Additionally, Biscaia et al. (2021) underlined that perceived value in spectator sports is significantly influenced by both functional and aesthetic quality, with aesthetics having a moderate impact on perceived value. These findings collectively support the hypothesis that facility aesthetics significantly impact users' satisfaction within the public sports environment.

5.2.5 Service Quality and Users' Satisfaction

The research hypothesis H5 was to evaluate if the service quality is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis aided to answer the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (service quality) in Sarawak?

The study found a statistically significant positive relationship between service quality and users' satisfaction. This indicated that when the quality of service in a sports facility improves, the users' overall satisfaction of the facility also increases. In contrast, lower service quality levels may cause decreased satisfaction among users. Previous research

has found a direct association between service quality and customer satisfaction (Pool et al., 2016; Yu et al., 2014), supporting the findings of this study. According to Avourdiadou and Theodorakis (2014) and Günel and Duyan (2020), users' satisfaction is influenced by service quality, whereas dissatisfaction may lead to users seeking to use alternative sports facilities, potentially resulting in failure to attract new users. Another research by Ko et al. (2011) also revealed in a sports football club, priority in providing top quality service is paramount in contributing to the satisfaction among the users. Notably too, the level of quality of customer experiences is interlinked directly with facility employees as highlighted by Sauer et al. (2017). Moreover, Yoshida and James (2010) reported in a study that the social aspect of service quality in view of the interaction between users and employees of the sports facility are closely related to impact the satisfaction among the users. Therefore, considering the results of this study and past literature, there are strong evidences to imply that there is a significant relationship between service quality and users' satisfaction from the context of public sport facilities in Sarawak.

5.2.6 Comfort and Users' Satisfaction

The research hypothesis H6 was to evaluate if comfort is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis aided to answer the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (comfort) in Sarawak?

The current research has identified a significant relationship between the comfort and users' satisfaction, emphasising that comfort quality has a positive impact on users' satisfaction. Similarly, other studies have demonstrated similar results. Past empirical studies have explored into the impact of seat comfort on users' satisfaction within sports facilities.

Chang (2000), Hill and Christine (2000), Höck et al. (2010), as well as Yoshida and James (2010) have consistently stressed the pivotal role of comfort in shaping the overall user experience. This was further supported by Wakefield et al. (1996) and Wakefield and Blodgett (2016), who highlighted that seat comfort comprises various factors such as seat quality evaluations, functional assessments, and overall seating condition. Moreover, the expectation of sports spectators for comfortable seating during events has been well-documented. Athanasopoulou et al. (2012), suggested that sports enthusiasts actively anticipate comfortable seating arrangements, necessitating that sports operators to develop or remodel facilities efficiently and effectively to meet these expectations. In addition, Shafie et al. (2023) have also proposed the role of seating comfort in shaping users' satisfaction within a commercial sports venue. In response to these demands, sports operators have increasingly prioritised comfort and quality amenities in the construction of sports facilities. In addition, Greenwell et al. (2002) noted the significant emphasis placed on comfort and quality amenities in various facility designs, highlighting the importance of creating a comfortable environment for users to improve their satisfaction.

5.2.7 Safety and Users' Satisfaction

The research hypothesis H7 was to evaluate if the safety is positively related to users' satisfaction. Based on the report of the main findings, the hypothesis contributed to address the research question: Will users' satisfaction be influenced by public sports facilities service environment attributes (safety) in Sarawak?

Results from the analysis found there was a statistical positive relationship between safety and users' satisfaction, denoting that safety dimension does have effect on satisfaction of the users. The significant relationship revealed that users of the facility consider safety as

an essential factor in using the facility. With higher standard of safety, this would boost the satisfaction level. This aligned with the findings by Jeon and Kim (2012) who discovered that safety factor such as equipment (e.g; fire extinguisher, hazard detectors and safety signage) has an impact on the users' perception and correspondingly foster positive outcomes on their satisfaction in the airline industry. Other study by Mat et al. (2018) also identified safety and security in portraying a strong positive association with the users' satisfaction. Furthermore, football enthusiasts feel safer when they find the stadium visually appealing and when their entry to and exit from the venue are convenient (Manca & Fornara, 2014). Kim et al. (2020) opined that satisfaction with sports facility utilisation is directly linked to effective risk management practices. They highlighted a well-established risk management system could instil a sense of security and confidence in users, influencing their perception of the facility. In the past research by Aznan et al. (2023), they emphasised that individuals experience higher satisfaction when they believe their safety is prioritised and potential hazards are identified and addressed. This positive perception extends to various aspects, including equipment quality, adequacy of safety measures, staff competency, and the overall ambiance of the facility. As such, it can be implied that safety factor is critical in determining the satisfaction among the users within the sports facility environment.

5.2.8 Users' Satisfaction and Loyalty

The research hypothesis H8 was to evaluate if the users' satisfaction is positively related to loyalty. Based on the report of the main findings, the hypothesis contributed to address the research question: Will users' satisfaction in public sports facilities affect loyalty in Sarawak?

The empirical findings of the existing study highlighted the fundamental role of users' satisfaction in supporting and enhancing the loyalty among users of public sports facilities in Sarawak. Hence, it can be noted that users' satisfaction has a positive relationship with user's loyalty as hypothesised. Support for this relationship can be found in the assessment of consumer satisfaction and loyalty with online review sites by Camilleri and Filieri (2023), who identified direct and indirect effects in predicting users' satisfaction and loyalty. Similarly, studies within the tourism industry by Han et al. (2021) and Wani et al. (2023) have suggested that satisfaction significantly influences loyalty and revisit intention. Jalilvand et al. (2014) also found a positive and significant effect of tourists' satisfaction on their level of loyalty. In the healthcare sector, Lacap (2022) discovered that patient satisfaction with the physical environment positively affects loyalty and intention to recommend. Cronin et al. (2000) indicated that consumer satisfaction is a key determinant of loyalty towards a product or service. Moreover, in the context of sports services, Schijns et al. (2016) found that athlete satisfaction directly influences customer loyalty and facility usage, as corroborated by. Similarly, research by Moura e Sá and Cunha (2019) on swimming pool centres revealed that positive word-of-mouth communication and psychological commitment are significantly correlated with satisfaction and loyalty. Afthinos et al. (2017) also found a strong relationship between satisfaction and loyalty in their study, further supporting the hypothesised relationship between users' satisfaction and loyalty in the context of public sports facilities in Sarawak.

Within the sports service environment, users' satisfaction tends to increase as their experiences with the sports facilities consistently meet or exceed their expectations. Satisfied users are more likely to form positive assessments of the facilities, which strengthen each time they engage with the environment. This high level of satisfaction fosters a strong sense

of loyalty, as it creates a favourable emotional connection between the users and the sports facilities. Consequently, users develop a deeper commitment and trust in the facilities, which is reflected in their repeated usage.

5.2.9 Loyalty and Reuse Intention

The research hypothesis H9 was to evaluate if the loyalty is positively related to reuse intention. Based on the report of the main findings, the hypothesis aided to answer the research question: Will users' loyalty in public sports facilities affect user's reuse intention in Sarawak?

According to the hypothesis results, there exists a positive correlation between loyalty and reuse intention. It showed in the public sports environment, user's loyalty has a significantly positive relationship with reuse intention among the users, meaning that higher levels of loyalty among users are associated with an increased intention to reuse the sports facility. In line with the past research, Howat and Crilley (2007) summarised that satisfied customers in public aquatic centres are more likely to increase their utilisation of services and recommend them to others, highlighting the profitability of customer retention as a strategy for acquiring new customers. Furthermore, satisfaction among users at sports centres positively correlates with their intention to return and exhibit high loyalty, with factors such as facility quality, customer service, and available sports activities significantly influencing these outcomes (Tsitskari et al., 2014). Observation by Alexandris and James (2003), suggested that customer loyalty is closely linked to participant retention at sports facilities. This was supported by Pilus and Hussin (2013), who found a high correlation between spectator loyalty and attendance at the stadium, indicating that loyalty enhances the frequency of spectators attending matches in the future. Moreover, Pilus et al. (2010) also

mentioned that perceived loyalty among spectators can enhance their frequency of attending matches at the stadium in the future.

In comparing the relationship between loyalty and reuse intention, the findings suggested that loyalty leads to a greater intention to reuse the sports facility. Reuse intention is closely linked to the behavioural response that follows the establishment of the emotional attachment. High levels of loyalty among users are largely due to their satisfaction with key service environment attributes, such as aesthetics, service quality, comfort, and safety. These attributes contribute to the characteristics of loyalty that users develop over time. When users are loyal, they are not only satisfied but also inclined to take concrete actions that demonstrate their loyalty, such as repeatedly visiting and utilising the sports facilities in the near future.

5.3 Implications

The outcomes of the analysis provided valuable views into the implications of the sports service environment on users' satisfaction, loyalty, and reuse intention in public sports facilities in Sarawak. These findings offered significant implications for both theoretical understanding and practical applications in optimising user's experiences and fostering long-term engagement with sports facilities. In the subsequent sections, the discussion will look into the theoretical and practical implications derived from the results of this study.

5.3.1 Theoretical Perspective

The findings of the hypothesis tests laid down useful theoretical insights into the effects of the sports service environment on users' satisfaction, loyalty, and intention to reuse in Sarawak's public sports facilities. Ultimately, this study could present a framework and recommendations to enable sport service providers and researchers in pinpointing specific

variables, components, and relationships pertinent to comprehending sport consumer behaviour. While some assumptions were supported by the data, others were not, necessitating a more detailed analysis of the theoretical foundations and implications for future study in the subject.

The lack of significance on the influence of physical condition, layout, and amenities on users' satisfaction demonstrated the complex nature of users' perceptions in sports facilities. These findings indicated that, while these characteristics might be related to users' experiences, their direct impact on overall satisfaction may be limited or dependent on other variables not considered in this study. Future studies could investigate more contextual factors or use alternative approaches to better understand their effects. In contrast, statistically significant findings of facility aesthetics, service quality, comfort, and safety highlight the vital role of these variables in shaping the satisfaction of customers. These findings are consistent with previous research stressing the relevance of aesthetic appeal, service delivery, and physical comfort in improving users' experiences across a variety of service contexts. From a theoretical approach, these findings help expand the understanding of the underlying mechanisms that drive users' satisfaction in sports facilities, enriching the theoretical frameworks in the field.

Furthermore, the supported hypotheses about the positive correlations between users' satisfaction, loyalty, and reuse intention concurred with well-known theory like the Stimulus-Organism-Response Theory. This research adds to the comprehension of the relevance of service environment factors in sports service industry by confirming the role of the safety, service quality, comfort, facility aesthetics and related service-consumption stimuli as essential drivers (stimuli) of the users' satisfaction (organism), as well as impacting the loyalty and reuse intention (response). These findings indicated that satisfied

consumers are more likely to engage in loyalty behaviours and show intentions to reuse sports facilities in the future. The expectation-confirmation model and the theory of Stimulus-Organism-Response give theoretical underpinnings for understanding these linkages, emphasising the role of users' perceptions, attitudes, and intentions in affecting behavioural outcomes.

5.3.2 Practical Perspective

To gain deeper insights into the complex relationship between the sports service environment and user behaviour within public sports facilities in Sarawak, this study examined a variety of hypotheses. The outcomes of these hypotheses offered a practical platform for increasing users' satisfaction, building loyalty, and encouraging reuse intention for such facilities. The practical findings will enable organisations to segment their consumers effectively, devise targeted marketing strategies for each segment, and establish relationships that foster satisfaction and loyalty among users.

First and foremost, the results of the research supported the critical importance of emphasising facility aesthetics. The statistically significant and beneficial impact of aesthetics on users' satisfaction indicates that putting effort into aesthetically pleasing and well-maintained facilities can have an immense effect on users' experiences. Sports facility managers can elevate users perceived expectation by constructing visually appealing facilities, which could improve satisfaction and promoting loyalty. Secondly, the focus on service quality arises as an important component in determining users' satisfaction. The results obtained showed a substantial relationship between service quality and users' satisfaction, justifying that high quality services in terms of consistently delivering exceptional interactions and engagement are crucial for ensuring favourable users'

experiences. As a consequence, sports facility managers should focus on creating efficient and effective service delivery platforms to meet users' expectations and increase satisfaction levels. Furthermore, the essence of comfort and safety in sports venues cannot be neglected. The positive effects of comfort and safety on users' satisfaction pointed out the need of prioritising these characteristics when designing comfortable and safe environments for users. Sports facility managers may boost satisfaction levels, create trust and loyalty among users, to foster long-term relationships.

Furthermore, these findings highlighted the significance of loyalty initiatives and activities in driving reuse intention. The positive correlation between users' satisfaction and loyalty demonstrated how nurturing loyal users through individualised services can result in higher intentions to utilise facilities in the future. As such, sports facility managers may consider introducing loyalty programs to encourage return visits and increase user's engagement. These findings do not only provide a foundation for improving the overall user's experience and maintaining the sustainability of Sarawak's public sports facilities but can be useful to guide other service providers in the private sectors as well.

5.4 Recommendation to Sarawak Sports Corporation

Public sports facilities play a vital role in promoting physical activity and community engagement. Therefore, it is essential to continually strive for improvements to enhance users' satisfaction, foster loyalty, and encourage repeat usage. Drawing from the hypotheses results, the findings provided recommendations for Sarawak Sports Corporation (SSC) to optimise users' experiences within their facilities.

Actionable measures to beautify the appearance and optimise functionality of existing sports facilities include maintaining the infrastructure building with periodic

maintenance in place, could allow regular maintenance and services to be carried out more efficiently. Besides, proper handling of corrective maintenance with the support from competent site personnel is another approach to mitigate unforeseen breakdowns. To begin with, maintaining the physical condition of sports facilities is paramount. While the hypotheses results did not show a significant impact on users' satisfaction, regular maintenance and upkeep are essential. SSC should prioritise addressing any damages promptly, upgrading equipment, and furniture. Since the results showed below par satisfaction on the furniture condition with low min values, further improvement to modernise the furniture with new designs is necessary. These efforts will create a positive first impression for users and contribute to overall satisfaction.

Similarly, while the layout of facilities showed minimal impact on users' satisfaction, optimising space utilisation and streamlining pathways can improve the overall flow of movement within the facilities. Moreover, SSC should conduct a thorough assessment of the current layout to identify areas for improvement, ensuring a seamless experience for users as they navigate the premises. Although amenities had a negligible effect on users' satisfaction, enhancing existing amenities and introducing new ones tailored to users' needs are essential. To become more competitive, SSC should uplift the recreational spaces within the facilities areas, pay more attention on restroom upgrades, and design a convenient access to meeting rooms and rest areas. In general, low rating was noticeable during the survey in which many respondents showed disagreement with the cleanliness condition of the rest room. A make-over of the rest room whilst ensuring its functionality will boost users' comfort and satisfaction during their visit.

The positive impact of facility aesthetics on users' satisfaction stresses the importance of creating visually appealing environments. SSC should focus on aesthetics in

facility design and maintenance, incorporating landscaping, attractive interior decor, and signage to create a welcoming atmosphere. These enhancements will contribute to a positive overall experience for users.

On the other hand, service quality emerges as a significant determinant for users' satisfaction, thus emphasising the crucial role of delivering exceptional customer service is critical. Besides, SSC should provide upskilling courses for facility employees regularly to ensure personnel can consistently provide high-quality service. To measure the post-service quality, implementing feedback mechanisms to address user's concerns promptly will further increase service quality. Another factor, comfort plays a vital role on users' satisfaction, indicating the importance of providing comfortable amenities and facilities. SSC should consider refurbishing the ergonomic seating, installing back rest seats, and improve the relaxation areas to enhance user's comfort. The heightened standards will create a conducive environment for users to enjoy their sports activities.

Additionally, safety is crucial for users' satisfaction, necessitating routine safety checks and the implementation of safety protocols. SSC should ensure compliance with safety regulations, install clear emergency signage, and address potential hazards promptly. These measures will create a secure environment, spurring user's confidence and satisfaction. Furthermore, the significant impact of users' satisfaction on loyalty highlights the benefit gains of fostering long-term relationships with users. Several approaches can be considered by SSC, such as implementing loyalty programs and organising family-oriented activities or events to attract more users. These efforts will not only maximise facility utilisation but also reach SSC's goals of promoting sports and recreation in Sarawak.

To conclude, the study's framework can serve as a guideline for stakeholders or other sports service providers to pay more attention on budget and manpower planning. Also, the framework and findings could be a reference for future construction of sports facilities, providing them the necessary criteria on service environment elements most suited to the preferences of users.

5.5 Limitations

The size and representation of the sample was a notable issue that has to be addressed in this study. The reliability and generalisability of research findings were dependent upon the sufficiency of the sample size and its representativeness. In this particular study, a small sample size or a lack of diversity and representativeness of the target population can seriously compromise the validity of the results. As a result, conclusions drawn from a small sample might not be reliable or generalisable to a larger population. Furthermore, the sample's representativeness is essential to ensure that the findings of the research may be applied to a larger population.

In this study, even though the minimum sample size was achieved, a larger sample size could potentially reduce any probability of under representation of samples. Whilst 255 questionnaires were distributed to individuals and follow-up efforts were made, only 216 responses were received. After reviewing these responses, 162 responses were considered valid for analysis. A sample's underrepresentation of individual or limited to certain geographical location may produce biasness and undermine the findings' validity. For example, the results might not adequately capture the experiences of all users of public sports facilities since the sample was predominately made up of users from the eight selected sports facilities. Also, responses from users may have varied based on various sports facilities

across Sarawak. Therefore, their experiences may differ and do not accurately measure the model. This limitation was due to time constraints and the large number of sports facilities available, which restricted the diversity of the study. Nevertheless, the methods used for sampling ought to be carefully considered in order to address this drawback, and efforts must be made to capture a representative and diverse sample of users from a range of facilities and geographical areas for appropriate generalisation.

Although the research methodology utilised in this study was comprehensive, the complexity of answering the questions by respondents could be challenging. Since the items measured were consisted of 50 indicators, the length of answering the questionnaires could be an issue for some respondents which could potentially affect the validity of the results. The questionnaire may have been excessively lengthy, especially for the respondents, and some of the items may not have been properly thought of due to respondent tiredness or a lack of cognitive effort to complete the questions accurately (Kock et al., 2021). This limitation can affect the quality of data collected and the validity of the study's findings. In order to remedy these possible drawbacks, future studies should investigate methods for simplifying and enhancing the questionnaire design, such as cutting down on the number of items or using skip patterns to customise the survey experience for every individual.

Another point to consider was that surveys were employed to obtain data regarding users' satisfaction, loyalty, and reuse intention, which were based on respondents' subjective opinion and responses. This reliance on self-reports may result in bias or inaccuracy due to reasons such as social desirability bias. In addition, participants may provide answers that they deem to be expected or socially acceptable, rather than expressing their genuine experiences or behaviours. Recognising the feasible issue of social desirability bias, researchers in the sports management field could consider during the research design stage

to reorganise the order of the construct's measurements, such as satisfaction, loyalty and reuse intention by incorporating other measurement constructs in between to minimise the possibility of respondents answering in a socially desirable manner. Sato et al. (2016) also demonstrated this approach by randomising the items included in the online questionnaire for each participant, which examined the contributions of distance-running events, behavioural loyalty, and psychological involvement to life satisfaction. Alternatively, introducing temporal separation strategy during survey could potentially reduce bias if data is collected at separate points in times. Having respondents to participate in the survey to measure the service environment factors at one point of time and the other constructs at a later time allows responses to be varied instead of allowing responses being answered to align what is anticipated. This method was also employed in Jang and Byon (2020)'s study when they incorporated temporal separation in measuring the relationship between playing intention and playing behaviour associated with esports gameplay.

5.6 Directions for Future Research

Further research in sports facility management could contribute to the holistic understanding of the intricate relationships that exist between users' experiences and the sports service environment. Based on the research findings, the following have been outlined pertaining to some possible avenues for future investigation.

Initially, researchers could investigate in-depth the physical, amenities and layout factors that could impact the associations found in this investigation from the perspective of other industries. These factors have shown differing results from previous studies, thus evaluating various users' demographics, prior experience with sports facilities, and different cultural backgrounds could all be looked into to provide a more comprehensive

understanding of users' satisfaction, loyalty, and intention to reuse. Through further investigation of these factors, researchers may acquire more information about the key mechanisms influencing behaviours of users. Although the current study presented useful key findings between users' satisfaction, loyalty and reuse intention relationships, future research could also employ a similar quantitative approach, utilising survey method to assess the direct correlation between user' satisfaction and reuse intention, enhancing the comprehension of user's behaviour in public sports facilities. This would complement the existing findings on the role of loyalty, creating a holistic view from another angle. Secondly, longitudinal studies offer a useful direction for further investigation. Longitudinal studies can provide insights into the stability and long-term effects of the sports service environment on user outcomes. This approach would enable researchers to assess changes in users' satisfaction, loyalty, and reuse intention across multiple time points.

Besides, comparative analyses between diverse nations or regions present another interesting area for further investigation. Through an analysis of cultural differences in how the sports service environment affects users' outcomes, researchers can identify distinctive elements that could affect satisfaction, loyalty, and intention to reuse. As this study concentrates on public sports facilities, it is also noteworthy to explore the sports facilities in the private sector in Sarawak to make comparison of the model outcomes. On the other hand, qualitative studies can also supplement quantitative results by offering profound insights into the individual experiences and viewpoints of individuals who utilise sports facilities. To gain a more comprehensive understanding of the phenomenon, in-depth interviews or focus group discussions may reveal underlying explanations, preferences, and challenges that influence users' satisfaction, loyalty, and reuse intention. By pursuing these directions for future research, scholars can contribute to the development of more effective

strategies for elevating users' experiences and encouraging long-term engagement with public sports facilities.

5.7 Conclusion

The final chapter concludes with a comprehensive practical assessment of the research questions investigated in this study, outlining the statistical significance of each dimension within the proposed model. Through rigorous analysis of the statistical results and the synthesis of supporting evidence from prior research studies, it was evident that the dimensions of the sports service environment have effectively contributed to accomplish the study's objectives. Specifically, the physical condition, layout, amenities, facility aesthetics, service quality, comfort, and safety factors have been examined in relation to users' satisfaction, loyalty, and reuse intention in public sports facilities in Sarawak. While some dimensions did not reflect statistically significant impacts on users' satisfaction, others demonstrated notable positive relationships, displaying their importance in shaping the overall user experience. These findings were in accordance with the research objectives of assessing the effects of the sports service environment on users' outcomes. In summary, the findings of this study made a valuable contribution to the body of knowledge on the effects of the sports service environment on users' satisfaction, loyalty, and reuse intention. By addressing key research questions and uncovering important insights, this study sets the stage for future research endeavours aimed at enhancing the user experience in public sports facilities.

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APPENDIX

Questionnaire



Questionnaire Survey of

“Effects of Sports Service Environment towards Users’ Satisfaction, Loyalty, and Reuse Intention in the Public Sports Facilities in Sarawak”

Dear Respondents,

This study aims to understand the condition of public sports facilities from the perspective of the users’ satisfaction. This questionnaire is designed to gather information about your experiences and perceptions regarding the quality of public sports facilities handled by Sarawak Sports Corporation in the major cities of Kuching, Sibu, Bintulu, or Miri during sporting events or any other leisure activities.

Rest assured, no individual names will be kept and your honest responses are strictly meant for academic purpose of this study. Out of respect, your privacy is of utmost importance and thus, your personal information will not be disclosed to any third parties. Please be informed that your voluntary input and support in contributing to this research are greatly appreciated.

This questionnaire will take approximately 10 to 15 minutes on average, and those 18 years old and above, who have used the public sports facility in Sarawak are the key target population for this research. Whilst there is no right or wrong answer, your earnest opinion is paramount for this study. Thank you for your time and patience in participating in this survey. Please read the question attentively and respond accordingly.

Section A: Demographic Information

This section provides an overview of the demographic profile of the individuals who participates in the survey, and used for the purpose of analysis. (Please answer and choose the answer accordingly)

Question 1. What is your gender? (please tick one)

- a. Male ☐
- b. Female ☐

Question 2. What is your age? (please tick one)

- a. 18-24 years ☐
- b. 25-34 years ☐
- c. 35-44 years ☐
- d. 45-54 years ☐
- e. 55 years and above ☐

Question 3. What is your highest education level that you have obtained? (please tick one)

- a. *Sijil Pelajaran Malaysia (SPM)* ☐
- b. Diploma/ Advanced Certificate/ Skilled Certificate ☐
- c. Bachelor's Degree ☐

Question 4. What is your current employment? (please tick one)

- a. Private sector ☐
- b. Government sector ☐
- c. Self-employed ☐
- d. Retired ☐
- e. Student ☐
- f. Unemployed ☐

Section B: General Information

Question 1. Please choose the public sports facility which you are most familiar with and have experienced prior to your visitation or usage (please tick one).

- a. State Stadium, Kuching ☐
- b. Indoor Stadium (*Perpaduan*), Kuching ☐
- c. Sarawak Lawn Bowl Arena, Kuching ☐
- d. Pandelesa Rinong Aquatic Centre, Kuching ☐

- e. Sarawak Stadium, Kuching ☐
- f. Sibu Indoor Stadium, Sibu ☐
- g. *Muhibah* Stadium, Bintulu ☐
- h. Miri Indoor Stadium (*Bandaraya*), Miri ☐

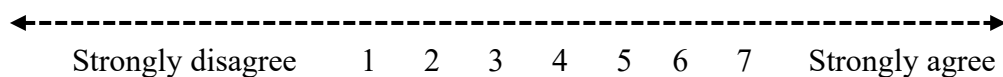
Question 2. When was the last time you visited or used the public sports facilities in Sarawak? (please tick one)

- a. Within the last month ☐
- b. Within the last three (3) months ☐
- c. Within the last six (6) months ☐
- d. Within the last year ☐
- e. More than a year ago ☐

Section C: Relationship between Service Environment's Elements, Satisfaction, Loyalty and Reuse Intention

This section is designed to understand about your experience while using the public sports facilities in your area. Please read each statement and choose the answer that most accurately tells how true the statement is for you.

This survey's responses are based on a seven-point Likert scale to express your opinion, with ratings of 1 (Strongly disagree), 2 (Disagree), 3 (Slightly disagree), 4 (Neutral), 5 (Slightly agree), 6 (Agree) and 7 (Strongly agree).



Question 1: In general, please indicate your level of agreement with the overall **physical** condition experienced during your visit or usage of the public sports facility.

No	Physical Attributes	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	The sports facility outdoor surrounding areas and grass are well-maintained	1	2	3	4	5	6	7

2	The sports buildings and layout are visually pleasing.	1	2	3	4	5	6	7
3	The sports facility has sufficient and comfortable space.	1	2	3	4	5	6	7
4	The furniture in the sports facility is modern and comfortable .	1	2	3	4	5	6	7
5	The sports facility is clean.	1	2	3	4	5	6	7

Question 2: In general, please indicate your level of agreement with the **layout** experienced during your visit or usage of the public sports facility.

No	Layout	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	Overall, the sports facility's layout makes it easy to get where you want to go.	1	2	3	4	5	6	7
2	The sports facility has sufficient space to handle crowds.	1	2	3	4	5	6	7
3	Signs at the sports facility help me know	1	2	3	4	5	6	7

	where I am going.							
4	Signs at the sports facility give clear directions of where things are located	1	2	3	4	5	6	7

Question 3: In general, please indicate your level of agreement with the **amenities** experienced during your visit or usage of the public sports facility.

No	Amenities	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	Availability of sufficient trash bins	1	2	3	4	5	6	7
2	A large parking area	1	2	3	4	5	6	7
3	Food and beverage provider is clean and comfortable	1	2	3	4	5	6	7
4	Toilets are clean and comfortable	1	2	3	4	5	6	7
5	The sports facilities are well-maintained	1	2	3	4	5	6	7
6	Prayer room is available	1	2	3	4	5	6	7

Question 4: In general, please indicate your level of agreement with the building **aesthetics** experienced during your visit or usage of the public sports facility.

No	Aesthetics	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	The sports facility's architecture gives it an attractive character.	1	2	3	4	5	6	7
2	The landscape of the sports facility is visually pleasing.	1	2	3	4	5	6	7
3	The sports facility has unique features that I do not see in other places.	1	2	3	4	5	6	7
4	The sports facility is painted in attractive colours.	1	2	3	4	5	6	7
5	The sports facility is decorated in an attractive fashion.	1	2	3	4	5	6	7
6	This is an attractive sports facility.	1	2	3	4	5	6	7
7	The interior of the sports facility is aesthetically appealing.	1	2	3	4	5	6	7

Question 5: In general, please indicate your level of agreement with the **service quality** of facility employees experienced during your visit or usage of the public sports facility.

No	Service Quality	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	Employees at this sports facility demonstrate their willingness to help attendees.	1	2	3	4	5	6	7
2	The employees at this sports facility respond quickly to your needs.	1	2	3	4	5	6	7
3	The sports facility's employees understand that you rely on their professional knowledge.	1	2	3	4	5	6	7
4	You can rely on the sports facility's employees in taking actions to address your needs.	1	2	3	4	5	6	7
5	You can rely on the friendliness of employees at	1	2	3	4	5	6	7

	this sports facility.							
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Question 6: In general, please indicate your level of agreement with the **comfort** of the seats experienced during your visit or usage of the public sports facility.

No	Comfort	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	There is enough knee space between the seats	1	2	3	4	5	6	7
2	There is enough elbow space between the seats	1	2	3	4	5	6	7
3	The sports facility provides comfortable seats	1	2	3	4	5	6	7
4	It is easy to get around people between seats	1	2	3	4	5	6	7
5	Seats have an unobstructed sightline to watch the game	1	2	3	4	5	6	7

Question 7: In general, please indicate your level of agreement with the **safety** experienced during your visit or usage of the public sports facility.

No	Safety	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	Emergency equipment for fire safety	1	2	3	4	5	6	7

	(e.g., fire sprinkler, extinguisher, emergency lighting, etc.) is installed to protect you							
2	Emergency / safety signs are installed	1	2	3	4	5	6	7
3	Hazard detectors are installed	1	2	3	4	5	6	7
4	Anti-slip flooring tools are installed	1	2	3	4	5	6	7

Question 8: Overall, please indicate your level of agreement with the **satisfaction** experienced during your visit or usage of the public sports facility.

No	Satisfaction	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	I was very impressed with the facilities provided by Sarawak Sports Corporation	1	2	3	4	5	6	7
2	I will recommend Sarawak Sports Corporation services to my family and friends	1	2	3	4	5	6	7
3	I will increase the frequency of Sarawak	1	2	3	4	5	6	7

	Sports Corporation's use							
4	If Sarawak Sports Corporation implements new facilities, I am willing to try and give advice	1	2	3	4	5	6	7
5	I prefer Sarawak Sports Corporation rather than other service provider.	1	2	3	4	5	6	7

Question 9: In general, please indicate your level of agreement with your **loyalty** perception pertaining to the sports facility.

No	Loyalty	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	I will use this sports facility again if the opportunity arises.	1	2	3	4	5	6	7
2	I will revisit this sports facility as the prices are appropriate.	1	2	3	4	5	6	7
3	I will revisit this sports facility as the quality of the service is excellent.	1	2	3	4	5	6	7

4	I will recommend this sports facility to others looking to use a sports facility.	1	2	3	4	5	6	7
5	I will recommend positively on this sports facility to other people.	1	2	3	4	5	6	7

Question 10: In general, please indicate your level of agreement with the **reuse intention** of the public sports facility.

No	Reuse Intention	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	I want to continue exercising at the sports facility.	1	2	3	4	5	6	7
2	When considering exercise, I think of the sports facility first.	1	2	3	4	5	6	7
3	I want to go back to the sports facility and exercise.	1	2	3	4	5	6	7
4	I want to actively participate in exercise at the sports facility.	1	2	3	4	5	6	7

Thank you for participating in this survey