

**PRIORITISING THE MAINTENANCE OF PUBLIC PARK FEATURES  
AND FACILITIES TO IMPROVE THE PARK USER EXPERIENCE**

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**FACULTY OF BUILT ENVIRONMENT  
UNIVERSITI MALAYA  
KUALA LUMPUR**

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EXPERIENCE**

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# **PRIORITISING THE MAINTENANCE OF PUBLIC PARK FEATURES AND FACILITIES TO IMPROVE THE PARK USER EXPERIENCE**

## **ABSTRACT**

Public parks are one of the spaces for all people to do conduct active or passive recreational activity. Features and facilities are provided by authority to support the recreational activity. However, assertions are found that there is problem on the provision and maintenance of features and facilities in public park. Accompanied by the rising maintenance cost, it indicated that there is a need to study the perception of park user on which features and facilities are crucial to provide and maintain. This research ranked on the importance on provision and experience from park user perspective, examine relationship between the maintenance quality and public park performance, and produce a maintenance priority list to facilitate authority in managing more effectively and produce a healthy society. The study adopted mixed-method approach which include quantitative and qualitative methods. In first phase, questionnaires containing perception towards importance on provision, experience in using the variables, public park performance, and recommendation on improvement were distributed to respondent who attended to any public park in Malaysia and a total of 1658 valid questionnaire were collected. The research identified importance of provision and experience using ranking analysis. Subsequently, correlation analysis was performed to test on the performance and a maintenance priority list is constructed. In order to validate the survey result, thirty (30) park goers are chosen for semi-structure interview to acquire further details on importance on provision and maintenance aspect. The findings highlighted ten (10) features and facilities were important to be provided in a park, these are: rubbish bin, washroom, lighting, track or path, signage, natural landscape, park furniture, soft designed landscape, prayer room, and hard designed landscape. In terms of experience, ten (10)

features and facilities given user a good experience and nine (9) features and facilities given user a moderate experience. Besides, it is found that the maintenance quality of all features and facilities is significant to public park performance. In the following analysis, ten (10) features and facilities arranged in descending order of importance, prayer room, washroom, signage, hard designed landscape, park lighting, park furniture, rubbish bin, soft design landscape, natural landscape, and track and path were found to be in need to be prioritised in terms of its maintenance.

**Keywords:** Public parks; Satisfaction; Performance; Maintenance

# **PENGUTAMAAN PENYENGGARAAN CIRI-CIRI DAN KEMUDAHAN TAMAN AWAM UNTUK MENINGKATKAN PENGALAMAN PENGGUNA TAMAN**

## **ABSTRAK**

Taman awam merupakan salah satu ruang untuk semua orang melakukan aktiviti aktif atau pasif. Untuk menyokong aktiviti tersebut, ciri-ciri dan kemudahan telah disediakan oleh pihak berkuasa. Walau bagaimanapun, didapati penegasan di mana terdapat masalah penyediaan and penyenggaraan pada ciri-ciri dan kemudahan disediakan. Disebabkan oleh kenaikan kos penyenggaraan, ini menunjukkan bahawa penting untuk mempelajari persepsi pengguna taman yang mana ciri-ciri dan kemudahan harus memberi keutamaan untuk disediakan dan dijaga. Kajian ini menilai kepentingan dalam penyediaan dan pengalaman dari perspektif pengguna taman, mengkaji hubungan antara kualiti penyenggaraan dan prestasi taman awam, dan membangunkan senarai keutamaan penyenggaraan untuk memudahkan pihak berkuasa dalam mengurus dengan lebih berkesan dan menghasilkan masyarakat yang sihat. Kajian ini menggunakan pendekatan kaedah campuran yang merangkumi kaedah kuantitatif dan kualitatif. Pada fasa pertama, soal selidik diedarkan kepada responden yang pernah menghadiri mana-mana taman awam di Malaysia. Soal selidik mengandungi soalan tentang persepsi terhadap kepentingan penyediaan, pengalaman bila menggunakan ciri-ciri dan kemudahan disediakan, prestasi taman awam, dan cadangan penambahbaikan. Sejumlah 1658 soal selidik yang sah telah dikumpulkan. Analisis kedudukan diguna dalam mengenal pasti keutamaan penyediaan dan pengalaman bila mengguna ciri-ciri dan kemudahan yang disediakan. Kemudian, analisi korelasi dilakukan untuk menguji kualiti penyenggaraan dan prestasi taman awam. Demi mengesahkan hasil tinjauan wawancara separa struktur dilakukan untuk memperoleh perincian lebih lanjut mengenai kepentingan aspek penyediaan dan penyenggaraan. Sebanyak tiga puluh (30)

pengunjung taman dipilih untuk wawancara. Keputusan menunjukkan bahawa terdapat sepuluh ciri-ciri dan kemudahan (10) penting untuk disediakan di sebuah taman iaitu: tong sampah, tandas, pencahayaan, trek atau laluan, papan tanda, landskap semula jadi, perabot taman, landskap reka bentuk lembut, surau, dan landskap reka bentuk keras. Dari segi pengalaman, sepuluh (10) ciri-ciri dan kemudahan memberi pengguna pengalaman yang baik dan sembilan (9) ciri-ciri dan kemudahan memberi pengalaman sederhana kepada pengguna. Selain itu, didapati bahawa kualiti penyenggaraan semua ciri-ciri dan kemudahan mempunyai hubungan dengan prestasi taman awam. Dalam analisis berikut, sepuluh (10) ciri-ciri dan kemudahan disusun mengikut penurunan kepentingan: bilik solat, tandas, papan tanda, landskap reka bentuk keras, lampu taman, perabot taman, tong sampah, landskap reka bentuk lembut, landskap semula jadi dan trek dan laluan didapati perlu diutamakan dari segi penyenggaraannya,

**Kata kunci:** Taman awam; Kepuasan; Prestasi; Penyenggaraan

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## LIST OF ABBREVIATIONS

|          |                                                                             |
|----------|-----------------------------------------------------------------------------|
| ASEAN    | Association of Southeast Asian Nations                                      |
| BWF      | Badminton World Federation                                                  |
| CERM CSQ | Centre for Environmental and Recreation Management Customer Service Quality |
| CCT      | Correlated Colour Temperature                                               |
| EEA      | European Environment Agency                                                 |
| GIZ      | Deutsche Gesellschaft für Internationale Zusammenarbeit                     |
| ISA      | International Society of Arboriculture                                      |
| KLCH     | Kuala Lumpur City Hall                                                      |
| LED      | Light Emitting Diode                                                        |
| NPS      | National Park Service                                                       |
| NRPA     | National Recreation and Park Association                                    |
| OMAG     | Oklahoma Municipal Assurance Group                                          |
| PPS      | Project for Public Space                                                    |
| STAC     | <i>Sepak Takraw</i> Association of Canada                                   |
| UCLA     | University of California Los Angeles                                        |
| UNESCO   | United Nations Educational Scientific and Cultural Organization             |
| USGS     | United States Geological Survey                                             |
| USDA     | United States Department of Agriculture                                     |

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

According to Oxford University Press (2002), public refers to things pertaining to or available to the general public, where, park is defined as a reserved area dedicated for a specific purpose. As the synthesis of public and park, public parks are generally places where anyone can enjoy recreational activities in the public domain. Cilliers (2015); Zupancic et al. (2015) defined that public park is a place that covered with green with sole purpose to provide recreation and leisure opportunity to the people. It comprehensively offer various passive, active, and structured activities which positively encouraged physical (World Urban Parks, 2016), psychological well-being (Nath et al., 2018; National Recreation and Park Association (NRPA), 2010), economic, environmental, social (National Recreation and Park Association (NRPA), 2010; Webb & Forrester, 2015), and education benefits (Zhou & Parves Rana, 2012).

According to The Cultural Landscape Foundation (2020), public parks are constructed in two orientations, one oriented towards protecting the environment, and the other oriented towards providing recreation opportunities. Public park exist vary in size, shape and, it's landscape can be natural or designed (World Urban Parks, 2016). Despite however, a park's landscape do not grounded distinctively into natural nor designed, Sadeghian and Vardanyan (2015) mentioned that park can be built by incorporating natural and man-made features. In terms of location, Shores and West (2010); Veitch et al. (2013) mentioned that public park is built dedicated for people resided in all areas included urban, suburban, and rural area.

In Malaysia, Department of Town and Country Planning (2014) expressed that public park is also known as recreation place. Public parks are available in many states in Malaysia. For instance, Sabah, Johor; Perak, Kedah (New Straits Times, 2015), Kelantan (Pasir Mas District Council, 2019), Terengganu (Rahayu Mustafa, 2019, Januari 05), Pahang (Raub District Council, 2020), Selangor (Dewan Negeri Selangor, 2023), Negeri Sembilan (Port Dickson Municipal Council, 2016), Malacca (Melaka Historic City Council, 2021), Sarawak (Unit Komunikasi Awam Sarawak, 2022), Perlis (Kangar Municipal Council, 2021), Pulau Pinang (Nur Izzati Mohamad, 2020, June 2), Federal Territories of Kuala Lumpur, Putrajaya (Lim, 2020, October 18) and Labuan (The Star, 2023, March 10). In addition to concepts, it is presently found that Malaysia has classified public park into forest park, lake garden, recreational park (National Landscape Department, 2022), and botanical garden (Kuala Lumpur City Hall (KLCH), 2021).

Kraft and Furlong (2015) specified that government is accounted in plan, built, and maintain of public park. Corresponded to Malaysia, Othman and Jafari (2019) pointed that public parks in Malaysia are under the administration of the government and Ministry of Housing and Local Government (2021b) asserted that it is the distinct responsibility of the government to provide and manage public park to its citizen. Ministry of Housing and Local Government (2021a) framed that there are three (3) different levels of local authorities namely City Council, Municipal Council, and District Council assigned to these gazetted areas and presently, there are a total of one hundred and forty-nine (149) local authorities in Malaysia. The Malaysian population is currently recorded at 32.7 million (Department of Statistics Malaysia (DOSM), 2020). Hussain et al. (2009) emphasised that there has been growing concern in healthy living lifestyle among the Malaysian. Thereafter, presence of public park has always been an essential space to secure the well-being of Malaysian (Sakip et al., 2015).

In response to this demand, Malaysian government has been active in creating more public park, and the completed plan have claimed successfully provide a decent life for Malaysians (Mohamed & Othman, 2012).

Despite claimant from authority that well-being of Malaysian is safeguarded, however, Mansor et al. (2019) revealed that Malaysia public parks are experiencing undesirable problems which led to a negative impressions from the perspective of user towards the attended public parks. Maryanti et al. (2016); Samad et al. (2021) pointed out that public park provision or its management are the issues circulating this public service. In addition to reduce allocated budget to park management, Abdul Rahman (2007) stressed that park user satisfaction is crucial aspect in perfecting the effectiveness of park management. Aziz et al. (2018) consolidated the idea that management practice of green space set out by local authority require to study comprehensive user perspective. Chan et al. (2018); Liu and Xiao (2020) agreed that for betterment of park management, it is essential to engage park user to attain their perception to help enhance the efficiency of management practice. Thereafter, this research is attempted to find out to what extend the features and facilities had served the publics' favour based on their respective perception.

## **1.2 Problem Statement**

Public parks issue had been persisted in Malaysia for a prolonged period. Recently, public park still garnered significant attention in the media due to the condition of features and facilities. News reported that public parks in Malaysia are badly suffering from littering problem, for instance garbage reported filled the pond (Annuar, 2019) and lake within the park (Priya, 2019), and overflowing the park rubbish bins (Thomas, 2021). Rubbish is also found strewn on facilities such as tracks (Wong, 2023), where alcohol bottles (Thomas, 2021)

and face mask (Benjamin, 2022) are garbage found strewn everywhere in the park. Dead organism such as fishes are found in the lake (Priya, 2019) and mosses are found grow on playground facilities (Benjamin, 2022; Thomas, 2021).

News coverage has also addressed the on the damages of features and facilities. Playground damages are repeatedly reported, for instance, see-saws are found decayed (Thomas, 2021), swing and children slide are found broken due to vandalism (Benjamin, 2022). In addition, tracks and path also reported broken or damaged (Lopez, 2024; Priya, 2019; Wong, 2023). On top of that, damages also found in park that contained pool where its concrete wall cracked (Annuar, 2019), and canopy from structure was blown away by extreme weather (Wong, 2023). Additionally, the park's aesthetic appeal was diminished by the presence of unkempt shrubs, deteriorating flowers, and a significant buildup of fallen leaves (Lopez, 2024).

Furthermore, it is reported that the features and facilities provided at the park did not meet the needs of its users. Wong (2023) indicated that existing non-functioning wading pool shall be replaced by exercise equipment to better serve the park's users. Ibrahim (2024) reported some of the park's features and facilities are insufficient or lacking. Simultaneously, Priya (2019) advocate to scrutinise park maintenance practice. More recent, Ibrahim (2024); Khir (2021) reported that many public park in Malaysia often demonstrate insufficient attention to the maintenance and inspection of their facilities. As a result, in the realm of news, derived from the recent news report, it is detected that public park issue are surrounded with provision and maintenance of features and facilities in public park.



Correspondingly, in the realm of research, European Environment Agency (EEA) (2015) emphasised strongly that provision and maintenance of green space is a key implication for sustainability and livelihood of a community. Similarly in the context of Malaysia, Abdul Rahman (2007) asserted that provision and maintenance are connected to user satisfaction. Jibril and Elfartas (2018) also pointed that to foster the Malaysian's life quality, park planning and management should provide facilities that meet the needs of visitors, meantime, also provide proper facility maintenance. Therefore, provision and maintenance are both crucial for the success of park. As a result, it is inferred that provision and maintenance of features and facilities in any green open space are vital to support the community life.

With respect to features provision, it is the responsibility of authority to ensure that the facilities provided are preferred by the public (Nor'Aini, 2017; Rouhi et al., 2017). Several research attempted to study provision of park features and facilities in Malaysia through collection on user satisfaction, needs, demands, and preferences. However, the provision of these features or facilities in present studies were found partly covered. A public park's features and facilities can be colossal and the user's interests may not be fully recognised. Samad et al. (2021) recently pointed that provision of public park features and facilities still has not reach consensus in public park usage satisfactory and Fatiah et al. (2021) advocated on scrutinise of provision park features and facilities. Thus, this research is design to study more comprehensively on user preferences towards features or facilities provided by public park.

With respect to maintenance, according to study by Mansor et al. (2019), that are many public parks in Malaysia still suffer from a park maintenance issue. In a recent case study of a public park in Temerloh Town, Pahang, Ling et al. (2021) suggest there is need on improvement of

facilities from the aspect of maintenance. The current public park maintenance service in Malaysia is top-down approach where government design, plan, built, and fully manage a park. There is accountable maintenance operations required to be undertaken to ensure park successfully attended to peoples' need at all times. As of now, there is scant information available on public park maintenance quality in the Malaysian context. Therefore, this research is also designed to access on the maintenance level of features and facilities provided.

Therewithal, park maintenance operations require fiscal support to ensure that the park consistently provides its service to the people (Maland, 2012). In the west, maintenance costs accounted more than three quarter of the budget allocated in maintenance of public parks (Tempesta, 2015). Where in Asia, National Parks Board (2011) asserted that the maintenance of landscape is the most expensive activity over the landscape life-cycle. Ahmad Shafee and Kamaruddin (2019); (Ibrahim et al., 2020) pointed that in Malaysia, public parks also face financial constraints due to escalating maintenance cost, posing challenges to their upkeep and sustainability. Ahmad et al. (2022) pointed high maintenance cost causes many public parks in Malaysia that equipped with excellent features and facilities remain neglected, deteriorating into disrepair and poor condition. Along these lines, it is detected that there is a fiscal constraint in maintaining park landscape. Thereafter, this research also intended to recommend a list of prioritised features and facilities from maintenance aspect to ease the diminishing of maintenance budget and rising of maintenance cost.

Maryanti et al. (2016) consolidated and emphasised that the rising of population accompanied with demand of park has led to growing concern in park management in Malaysia. Azenan et al. (2021) recommended that there is a need to inspect on the visitor perception towards more public park. In addition, Based on antecedent reports, statements, and recommendations,

it is detected that there is a dearth in research on all public park issues relating to provision and maintenance of features and facilities in Malaysia which requires the involvement of park users. Sreetheran (2017) emphasized that understanding park users' perceptions is crucial for effective public park management, as they are the primary users with firsthand experiences. Thus, this research is designed to understand the perception and experience of user towards preference and maintenance of features and facilities in order to provide a crucial insight to authorities in formation of a sound park provision and management practice for public parks in Malaysia.

### **1.3 Research Questions**

Derived from the present report and current research recommendation, the following research questions are formed:

1. What are the public preferences and maintenance quality of features and facilities in public park?
2. How does the maintenance quality of public park influence the public satisfaction?
3. How to improve the public satisfaction by enhancing the maintenance quality of public park?

### **1.4 Research Aim**

To evaluate user perceptions and experiences regarding provision and condition of public park features and facilities, analyse their relationship on user experience with conditions of public park features and facilities, and develop a maintenance priority list to enhance the effectiveness of public park management.

### **1.5 Research Objectives**

The research is designated to study on the perception on the provision and experience towards public park features and facilities. In order to achieve the aim of the research, the objectives are stated as below:

- (a) To identify the user perception and experience on provision and condition of public park features and facilities.
- (b) To investigate the relationship between experience of park user and public park performance.
- (c) To propose the maintenance priority list of features and facilities to enhance effectiveness of public park management.

### **1.6 Limitation of Study**

This research seeks to study in general the perception and experience on provision and maintenance of public park features and facilities among all Malaysians. This study has not included features and facilities that facilitate the non-able body user. The concern of able and non-able body park user is different. Non-able body people are also part of the whole society, thus, their perception shall be taken into consideration in the design, planning and managing of public park (Yilmaz et al., 2013).

### **1.7 Importance and Relevance of the Study**

The results obtained from this research are expected to assist the park management by informing on which facilities shall be prioritised in terms of its provision as well as maintenance. The importance and relevance are depicted as follow:

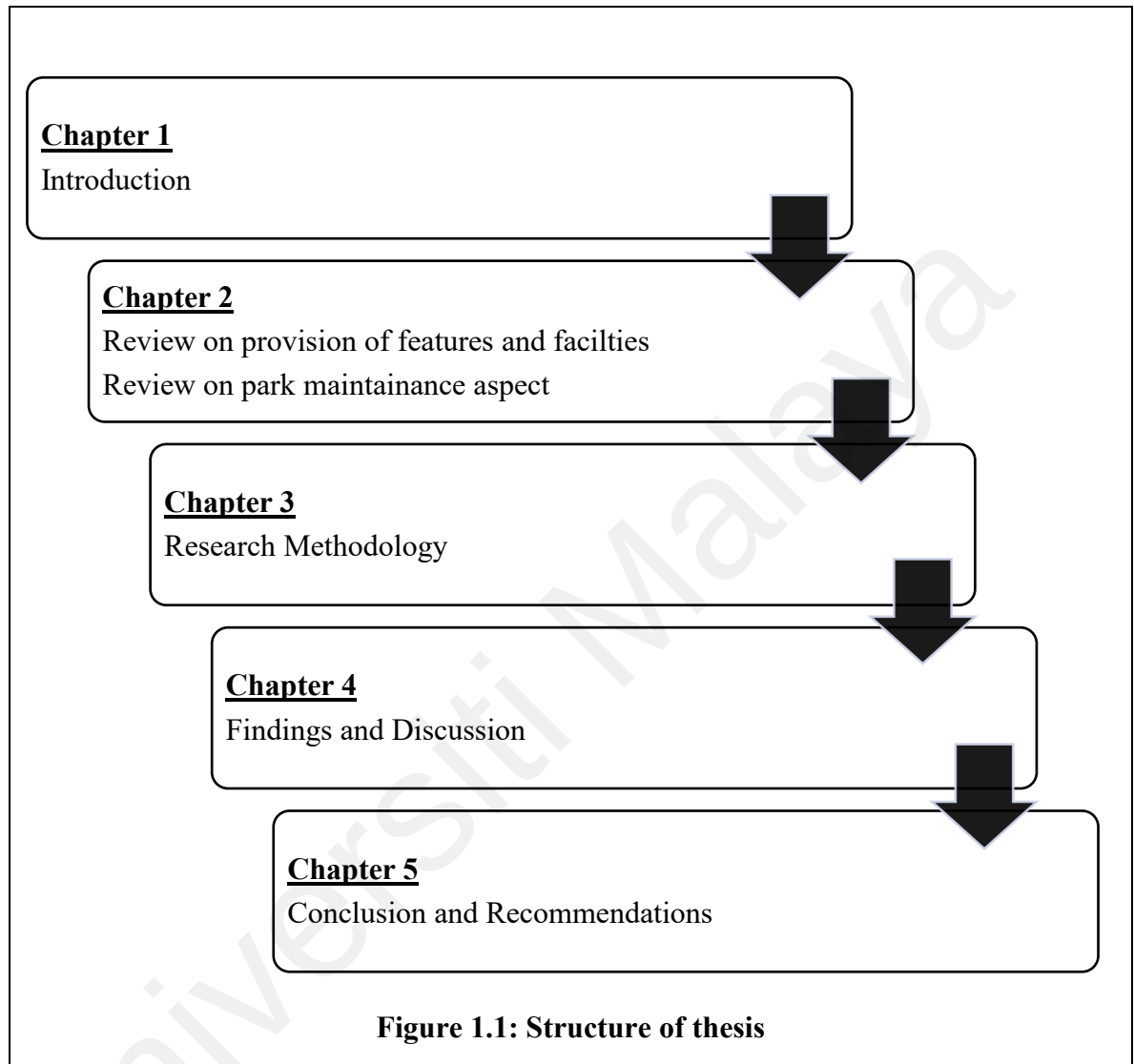
- (a) This research helps to provide information to park management towards current provision of features and facilities.

- (b) This research helps provide information to park management towards current maintenance experience of features and facilities given to the park user.
- (c) The maintenance priority list obtained through the study allow park management to maintain the park features and facilities more efficiently to enhance user experience.
- (d) This research able to contribute research findings into body of knowledge in recreation field to deliver the importance of provision and maintenance of park features and facilities.

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## 1.8 Structure of Thesis

This thesis is structured into five chapters as shown in Figure 1.1.



Chapter 1 brief on the background of research topic and provide to date information in related to research field and identification of research gap. Subsequently, research question, aim, and objectives of the study are identified. In addition, this chapter also brief on the limitations of study as well as benefits of the research.

Chapter 2 reviewed on the historical development of public park, and public park satisfaction indicator, subsequently recapitulate the public park features and facilities that affect the perception of park user. This chapter also brief on the park maintenance policy and strategy, park maintenance operation, maintenance dimensions and park performance indicator.

Chapter 3 detail on the research methodology adopted in this study. It entailed on selected research design which is sequential explanatory design which involve both quantitative and qualitative approach. This chapter also depict on the data collection method of both quantitative and qualitative phase, sampling technique, research area, identification of research population, and type of adopted analysis.

Chapter 4 present on the discussion and findings of result generated from two stages of data collection which are questionnaire survey and semi-structure interview. Statistical Package for Social Sciences (SPSS) software is utilised in processing the valid questionnaire and the findings are brought forward for discussion. The data collected from semi-structured interview is included to validate the results of questionnaire survey result.

Chapter 5 recapitulate overall research findings based on formulated objectives. A contribution to knowledge in the recreational field is also provided in this chapter as well as future research ideas.

## **1.9 Chapter Summary**

This chapter briefs the background of the study and identify the issue and research gap related to perception and experience of park user towards public park features and facilities to improve the park performance. Three research objectives are formulated based on review of

research background and problem statement. In order to achieve the formulated objectives and deliver credible benefits, the following chapter introduce literature largely focused on current user perception towards recreation features and facilities, review on aspect of park maintenance, and its performance indicator.

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## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Design, planning and management of public park that include user perception and preferences often promote park visitation (Zainol & Au-Yong, 2016), user satisfaction (Chen et al., 2009; Rouhi et al., 2017), and deliver a healthy society (Zainol & Au-Yong, 2016). Recreational experience rely on the provision of facilities in the green space area, therefore, Driver and Ross Tocher (1979) pointed that it is essential for recreational planners to ensure provision of facilities to allow recreational user pursue their respective recreational target. Recreational target is a form of goal where user visits park with intention to gain some return. Physical, mental, social well-being are examples of recreational return that the user often seek (Ayala-Azcárraga et al., 2019). Abdullah et al. (1999); Ali and Nawawi (2006); Wall et al. (1999) mentioned that features or facilities are required to be offered in the way that favour of the peoples' need, demand, and preferences or otherwise, user may appear dissatisfy and in worse scenario the green space may go underutilised or abandoned.

#### **2.2 Development of World Public Park**

Public recreation space today originated from garden built before the Common Era during the sovereign of ancient dynasty, kingdom, or empire. The earliest recorded history of garden existed at least two thousand (2000) years ago. United Nations Educational Scientific and Cultural Organization (UNESCO) (2022) promulgated that Wu dynasty in China arose in the 6<sup>th</sup> century build garden dedicated to satisfying the royal's hunting temperament and these gardens contained natural and manmade features such as water, stones, plants, and buildings imprinted with Chinese calligraphy and paintings. In the western or middle eastern context,

similar to the function as the ancient Chinese garden, Robert and Roger (1993) mentioned that Babylonian, Assyrian, Persian, and Indian were ancient empires before Common Era with built gardens as a hunting ground contained floral display and water fountains for the nobles.

Later, the rise of Roman empire spanned across Common Era had garden built adjoined to private real estate property such as house with more elaborated facilities such as bath and ball courts (Robert & Roger, 1993). The emergence of garden or parks that built to serve only the royals, nobles, or aristocrat prolonged until 19th century. Hyde Park (The Royal Parks, 2022a) and Kensington Garden in United Kingdom (The Royal Parks, 2022b), Château de Versailles Garden in France (Château de Versailles, n.d.) and others were examples of parks that serve the upper class. Many of these parks later opened to the public. Hyde Park is the earliest privately owned park opened to the public in year 1637 a century after the British monarch acquired from aristocrat, the transition of park nature came alongside on its changes slowly on the park landscape include from fence, followed by lake, monument, roundabout, lodges, gates, bridge, roads, and memorial fountain (The Royal Parks, 2022a).

In United Kingdom, Birkenhead Park in Liverpool was the first public park created in 1847, with elements such as trees, shrubs, meadows, an entry archway, carriage road, park drive, a lake, and paths (Birkenhead Park, n.d.). Subsequently, parks designed for the general public began to spring up one by one. For instances, Volkspark Friedrichshain in Germany in 1848 (Volkspark Friedrichshain, 2020) and Central Park in the United States in 1859 (Central Park, 2018). Sports ground, playground, café, barbeque area, monuments, sculpture, and fountain were features provided in Volkspark Friedrichshain (Volkspark Friedrichshain, 2020), where for Central Park, it was equipped with lawn, woods, streams, and lakes, then over time, park

commission added path, carriage drive, equestrian trail, baseball and soccer field, merry-go-round, skating rinks, zoo, garden, monuments, concert, and theatre (Central Park Conservancy, n.d.).

In the eastern region, Hong Kong at the time as British colony had first public park complete with shrubs, trees, decorated plant bed, pavilion, and fountain known as The Botanic Garden opened in 1864 (Farris, 2016). Subsequently in early 20<sup>th</sup> century, Blake Garden West End Park, and King George V Memorial Park were introduced as public park equipped with features such as flower bed, path, gazebo, benches, lawn, gate, plaque, and children playground.

### **2.3 Development of Public Park in Malaysia**

During pre-colonisation of the British, parks or gardens in Malaysia were first built for the use of the nobles which is similar to the original intention of parks or garden built in the United Kingdom and France. In Malaysia, the first recorded appearance of garden was a wide green space built adjoint to private real estate property which is the royal residence (Bakar, 2002). Within the green space of the royal palace, row of palm trees was planted along the perimeter fence and slitted bamboo plants were strategically placed at the main entrance, meantime, these green spaces also deliberately arranged to plant fruits, vegetables, herbs, or divide into secluded garden, and recreational garden (Bakar, 2002).

During the colonisation period, gardens such as lake garden and botanical garden were built in Malaysia serving mostly as a leisure ground for the British meantime acted as contribution to plantation economy (Federal Department of Town and Country Planning, 2005). Penang Botanical Garden located in Penang was the first botanic garden built in year 1884, then

followed by Lake Gardens located in Kuala Lumpur built in year 1890, and Taiping Lake Garden located in Perak built in year 1910 were gardens and lake built during the colonisation period (Bakar, 2002).

Independence was achieved by Malaysia on 31 August 1957 after the British left the country. Instantaneously, Malaysian government focuses on development of major infrastructure and public utilities development (Bakar, 2002). Roads, airports, port, and power stations were among the examples of major infrastructure (Masrom et al., 2015). Water supply, sewerage and drainage are among the examples of public utilities (Ministry of Economy, 2020). development of public parks was not prioritized at that time, as the primary focus was on eradicating poverty in the country (Bakar, 2002). Policies passes down by the government have proven successful as population, income level and educational level increases, resulting in a greater need for recreation space as people become more health-conscious (Bakar, 2002).

In order to fulfil the need of the people, government has been actively provided recreational space for the Malaysian started in the late 20<sup>th</sup> century. Dali (2003) pointed out that deliberate policy passed by the government after independence has led to provision of public park such as Perdana Botanical Garden formerly known as Lake Gardens and Titiwangsa Lake Garden which generally contained decorative flower bed, playing field, and trees for the people. In addition, Permaisuri Lake Garden, Shah Alam Lake Park and Subang Jaya Park were also among the earliest public park built for the Malaysian (Bakar, 2002).

To encapsulate, gardens during ancient times were built to please the royals or affluent. The emergence of park for the public were mainly due to the mercy of the government or demographic changes (Dali, 2003) or social reform (Cairns, 1997). Despite however, particular attention was given in terms provision of features spanned across these recreation

areas since ancient time regardless of its purposes such as leisure or its economic value as Robert and Roger (1993) asserted that the provision of features in the ancient times was quite flourish. The increasing complex and compact society in the world had direct impacted the availability of parks and its features.

### 2.3.1 Category of Public Park in Malaysia and its Provision of Features and Facilities

According to Ministry of Housing and Local Government (2023a), in Malaysia, public park categorised into six (6) categories which are play lot, play field, neighbourhood park, local park, urban park, and regional park. Ministry of Housing and Local Government Malaysia (2000) The type of public park shall be provided based on population catchment size as depicted in Table 2.1 below:

**Table 2.1: Hierarchy of public park in Malaysia**

| <b>Category of Public Park</b> | <b>Population Size</b>   | <b>Land Area (hectare)</b> | <b>Distance (Kilometre)</b> |
|--------------------------------|--------------------------|----------------------------|-----------------------------|
| Play Lot                       | 300 to 1,000 peoples     | Minimum 0.2 hectare        | Less than 0.5km             |
| Play Field                     | 1,000 to 3,000 peoples   | Minimum 0.6 hectare        | Less than 1.0km             |
| Neighbourhood Park             | 3,000 to 12,000 peoples  | Minimum 2.0 hectare        | Less than 1.5km             |
| Local Park                     | 12,000 to 50,000 peoples | Minimum 8.0 hectare        | Less than 3.0km             |
| Urban Park                     | Above 50,000 peoples     | Minimum 40.0 hectare       | Within 5.0km to 10.0km      |
| Regional Park                  | Entire region            | Minimum 100.0 hectare      | Within one (1) hour drive   |

Source: Ministry of Housing and Local Government Malaysia (2000)

Play lot and play field are aim to provide as recreational place for children. Play lot specifically provide to pre-school children whereby play field are for primary school children (Ministry of Housing and Local Government Malaysia, 2000). Pre-school children are usually below the age of six (6) (National Digital Department, 2024), Primary school children

are usually aged between seven (7) to twelve (12). Ministry of Housing and Local Government Malaysia (2000) delineated that play lot shall consist of equipment for young children such as climber, swing, slide, and play structure, whereby play field is advised to provide balance beam, climbers, merry-go-round, swing, slide, bars such as horizontal, ladder, and parallel bar, and lastly area for basketball, volleyball, badminton and tennis.

However, at the local council level, it is found that the provision of facilities varies, for instance, Petaling Jaya City Council outlined that play lot located in Petaling Jaya generally consist of signage, lighting, rubbish bin, children play area according to age, seating, gazebo, tree, and ornamental flower (Petaling Jaya City Council, 2024). Public parks in Putrajaya outlined that play lot shall consist of junior swing set, see saw, slide, turf, planting, bench and others while play field shall consist of play equipment suitable for older children. Senior and junior swing set, integrated play structure, see saw, softscape, benches, court and field such as badminton, *sepak takraw* and others (Putrajaya Corporation, n.d.).

Neighbourhood, local, urban and regional park are public parks that serves the recreational needs of people of all ages. For neighbourhood park, Ministry of Housing and Local Government Malaysia (2000) suggested that neighbourhood park shall consist of features and facilities such as lawned area for activities such as football, netball and others, ballcourts, play lot and play field. Putrajaya Corporation (n.d.) outlined that neighbourhood park shall consist of retaining wall, walking path, bicycle tracks, seating, rubbish bins, lighting, gazebo, picnic structures, play features, game court, and water features. For local park, Ministry of Housing and Local Government Malaysia (2000) recommended provision of features and facilities such as lawn, ball courts, enclosed hall, sports field, play lot, walking path, and bicycle track. Putrajaya Corporation (n.d.) outlined that local park shall equipped with ball

courts and pitches, children playground, walking path, outdoor gym facilities, and softscape such as vegetation.

For urban park, Ministry of Housing and Local Government Malaysia (2000) advised to provide features and facilities such as sports complex, play field, ball courts, and play lot. Putrajaya Corporation (n.d.) drew out that urban park in Putrajaya shall consist of walking path, lighting, ornamental greens, seating, gazebo, signage, fences, water features, hardscape such as wall and fence and others. For regional park, vegetation, play lot, play field, sports complex, ball courts for tennis, volleyball, badminton, netball, and basketball are recommended to be present (Ministry of Housing and Local Government Malaysia, 2000). According to Ministry of Housing and Local Government (2023b), Kepong Metropolitan Park and Kiara Forest Park were examples of regional park. KLCH specified in Kepong Metropolitan Park, features and facilities provided are trees, boating, kayak, walking path, outdoor gym facility, integrated children playground, skateboard, swing, see-saw, climbers, and field for football, while in Kiara Forest Park, flora, pond, children playground, walking path, gazebo, and toilet were provided (Kuala Lumpur City Hall (KLCH), 2021).

Generally, based on guidelines prepared by the Department of Town and Country Planning for the planning of open spaces and recreation in Malaysia, Anuar and Muhamadan (2018) pointed out that there is a lacking of guideline in provision of features and facilities towards Malaysian public park. For instance, guideline in provision of facilities in neighbourhood park stipulate to provide space for passive activity (Ministry of Housing and Local Government Malaysia, 2000). A space for passive activity required facilities to support the doings and the guideline does not specify what facilities are needed. However, there are still

limited data available, which has been stated out by the responsible executing body for the respective administered area. The summary is presented in Table 2.2 below:

**Table 2.2: Summary of provision of public park features and facilities by executing body**

| <b>Category of Public Park</b> | <b>Outline of Provision of Features and Facilities</b>                                                                                                                                                                                 | <b>Area</b>                 | <b>Executing body</b>                                             |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------|
| Play Lot                       | Signage, Lighting, Rubbish bin, Junior play facilities (such as junior swing set, see saw, and slide), Park furniture (such as seating and gazebo), and Softscape (such as tree turf, and ornamental flower).                          | Petaling Jaya and Putrajaya | (Petaling Jaya City Council, 2024); (Putrajaya Corporation, n.d.) |
| Play Field                     | Children Playground (such as senior swing set, junior swing set, integrated play structure, see saw), Softscape (such as tree), Park furniture (such as benches), Court and field (such as badminton, <i>sepak takraw</i> court)       | Putrajaya                   | (Putrajaya Corporation, n.d.)                                     |
| Neighbourhood Park             | Children Playground, Track and path, Park furniture (such as benches and gazebo), Hardscape (such as retaining wall), Natural landscape (such as water), Rubbish bins, Lighting, Picnic area, and Ball court (such as football court). | Putrajaya                   | (Putrajaya Corporation, n.d.)                                     |
| Local Park                     | Ball courts and pitches, Children playground, Walking path, Outdoor gym facilities, and Softscape.                                                                                                                                     | Putrajaya                   | (Putrajaya Corporation, n.d.)                                     |
| Urban Park                     | Children playground, Walking path, Hardscape (such as retaining wall and fence), lighting, Softscape (such as ornamental greens), Park furniture (such as seating, gazebo), Signage, and Natural landscape (such as water features).   | Putrajaya                   | (Putrajaya Corporation, n.d.)                                     |



Table 2.2, continued

| Category of Public Park | Outline of Provision of Features and Facilities                                                                                                                                                                                                                                                                                                                    | Area         | Executing body                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------|
| Regional Park           | Softscape (such as trees, flora), Water activity facilities (such as boating and kayak), Walking path, Outdoor gym facility, Children Playground (such as swing, see-saw, climbers) Indoor sport facilities (such as skateboard), Outdoor sport facilities (such as football field), Natural landscape (such as pond), Park furniture (such as gazebo), and toilet | Kuala Lumpur | (Kuala Lumpur City Hall (KLCH), 2021) |

## 2.4 User Perception and Experience Towards Park Features and Facilities

Abdullah et al. (1999); Ali and Nawawi (2006); Wall et al. (1999) mentioned that features or facilities in a recreation place are required to be offered in the way that favour the peoples' need, demand, and preferences. Wright Wendel et al. (2012) stressed that it is indomitable to include people need, demand and preferences to ensure good user experience. User experience towards green open spaces encompasses how individuals perceive and interact with these areas, which is influenced by factors such as the availability and condition of features and facilities (Zhu et al., 2025), sensory experience such as visual appeal or calming effect (Zhu et al., 2025), sense of personal safety and security (Ahirwal, 2020; Suhaidi et al., 2025), social interaction between or among others (Ahirwal, 2020; Wright Wendel et al., 2012), and comfort (Zhu et al., 2025) are example of factors contributed to user experience. The following section reviews the features and facilities perceived as important by park users, along with their corresponding user experiences. Furthermore, relevant research conducted on various aspects of these features and facilities is also examined.

#### **2.4.1 Natural landscape**

McClelland (1993) expressed that natural landscape within a park is amalgamation of its original appearance of land during the construction of park. Norlizawati et al. (2007) expressed that natural park landscape depicts native or untouched setting that has naturally existed. According to Ahmad Shafee and Kamaruddin (2019); National Geographic (2020), natural landscape may include mountains, hills, plains, plateaus, lakes, streams, soils and natural vegetation. According to Mahmoud (2011), lake or pond were anticipated hydrography by park user as it irrigates plant, beautify the park and regulate temperature for the comfortability of the visitor in Egypt. Maulan (2002, 2015) asserted that lake accommodate various recreational activity and Mohamed and Othman (2012) verified that lake is appreciated and affected the Malaysian park user satisfaction. Zhang et al. (2022) added that water feature such as river is imperative features to have in park among the Chinese. Park that located within hills or mountain important to user perception in Turkey (Işıl Çakıcı Kaymaz et al., 2012). In addition, hilly landscape is also appreciated in Wang et al. (2021)'s study.

Among the mentioned geographical features, water related landscapes are appreciated in many park studies. Lynch (1960) pointed water can be stimulant attracts people to explore open spaces. It is a great nature that improved ecology by cleaning water, improved air quality, provided vegetation buffer between concrete building, a habitat for fauna, and allow human to connect with nature (Ahmad Shafee & Kamaruddin, 2019). Wang et al. (2021) studied that subjected to park studied, adequacy of water landscape correlates to the visitor satisfaction. Water is defined in two broad categories which are still and active water element

(Sorvig, 1991). Natural waterfall is considered active water element where lake and river is considered as still and slight motioned water element (Duzenli & Özkan, 2016).

Deng et al. (2020); Mumcu and Yılmaz (2016) found that presence of water is preferred by the public in the park and Feng and Zhao (2022); Z. Wang et al. (2020) outlined that park user felt water features increased their self-satisfaction, physical and mental health. In addition, Mohamed and Othman (2012) Duzenli and Özkan (2016) emphasised that lake provide a cooling and refreshing nature that help established a tranquil feeling. Similarly, Ahmad Shafee and Kamaruddin (2019); Mohamed and Othman (2012); Wang et al. (2019) agree that water is a mediator that help park patron reduce stress level, fatigue, lower frustration, tension and irritability levels. In Malaysia, lake (Abdul Malek & Nashar, 2018; Maulan, 2002; Mohamed & Othman, 2012) and pond (Figure 2.1) (Abdul Malek & Nashar, 2018) are preferred still water features by park patrons. Conversely, Duzenli and Özkan (2016) found that park goer shown intense interest towards active waterfall.



**Figure 2.1: Pond**

Apart from water features, physical geography also found intersected human perception, for instance, geographical morphology such as slope (Figure 2.2) contributed to physical activity (King et al., 2000) and landscape visual quality in the aesthetic way which has contributed to satisfaction (Liu & Xiao, 2020) of the park goer. Zhang et al. (2013) pointed that presence of slope adjoining with water element and planted tree reportedly eased the heat from weather felt by the park user. Degree of slope is found associated to the aesthetic perception of user, and it indicated that user appreciate having incline landscape in the public park (Jahani et al., 2022). Presently, despite there are several types of natural landscape, studies have furthered addressed user perception in terms of its adequacy of water feature and design of natural landscape.



**Figure 2.2: Slope**

#### **2.4.2 Designed landscape – Softscape (Tree, Plant bed & Lawn)**

Designed landscape refer to presented settings that involve intersection of human ideas (Ahmad Shafee & Kamaruddin, 2019; Norlizawati et al., 2007). Kendle and Forbes (1997) expressed that design landscape exhibit natural traits which involved human made-up such as visually pleasing flower bed and mown grass (Kendle & Forbes, 1997). It is a purposive fabricated landscape provided with intention to decorate and beautify a park (Norlizawati et

al., 2007). Generally, designed landscape is sub-divided into softscape and hardscape. According to Ibrahim (2016); Shukur et al. (2012), softscape that presence in public park generally include tree, plant bed and lawn.

In a review of research across United States, Australia, Scotland, Spain, South Africa, and Canada by McCormack et al. (2010), trees (Figure 2.3) are feature that preferred by all ages. In addition, appreciation of trees was also well embraced in the Iranian community (Goodarzi & Haghtalab, 2016). It has been found that trees are used by children to do physical activities, such as climbing (McCormack et al., 2010). Some research found that tree is appreciated for its shades by the Dutch (van den Berg et al., 2022; van Vliet et al., 2021), the Chinese (van den Berg et al., 2022), Dubaiians (Jung et al., 2022), and Malaysian (Mohamad Muslim et al., 2018). Some research identified tree is appreciated for its restoration and relaxation benefits by the Hongkongers (Wan et al., 2021), Australian (Astell-Burt & Feng, 2019), and Malaysian (Che Rose & Basri, 2019; Maulan, 2002, 2015; Mohamed & Othman, 2012). Besides, tree also provide security purposes to the park goer (Che Rose & Basri, 2019; Malek & Nashar, 2018; Nordh et al., 2009).

Studies has identified further that the species, location, and density of tree are discovered in public park perception study, for instance, In Malaysia, Mohamed and Othman (2012) stated that palm tree provided in park is well satisfied the park attendant. In terms of location, it has been found that people enjoy relaxing under trees planted along the park lake according to Jibril and Elfartas (2018). In Sweden, trees planted in a way that enveloped the park creates a safe pit are preferred by the park visitor (Nordh et al., 2009).

In terms of tree density, there are two grouping of people with one prefer higher tree density and another prefer lower tree density (Özgüner & Kendle, 2006). Denser tree is found able to increase sense of inner joy for some wilderness orient individual (Özgüner & Kendle, 2006; Shanahan et al., 2015). Conversely, some individual viewed that dense tree creates insecurity as it hindered spatial visual access (Abdul Malek & Nashar, 2018; Chiang et al., 2011; Hami et al., 2011). Bjerke et al. (2006); Parsons (1995); Shanahan et al. (2015) discovered for least wilderness orient user, tree density always associated with sense of security and its relationship often inversely related. Similar claimant has also specified by Hashim et al. (2016); Lis et al. (2019); Shanahan et al. (2015) whom study also confirmed visitor safety and security linked with tree density.



**Figure 2.3: Tree**

Apart from tree, it is discovered that studies had been furthered on plant bed. it is found that blooming flower or flower maze were appreciated by the Hongkongers due to its aesthetic purpose (Wan et al., 2021). In addition, flower that are planted in plots known as flower bed were appreciated by the Dutch (van Vliet et al., 2021). Flower plots is also found strongly preferred by the Malaysian (Mohamed & Othman, 2012; Othman et al., 2008). Surprisingly,

in van den Berg et al. (2022) study, the Chinese were found has no clear preferences towards flower bed.

According to Othman (2004), plant bed (Figure 2.4) such as flower bed planted along way provides direction for the park user by guiding them during park visit. Othman et al. (2008) specified that symmetrical planting design of flower bed at the entrance offered sense of harmony and serenity. A well organised and beautiful flower bed able to increase visitor satisfaction (Mohamed & Othman, 2012) and brought returning visit (Che Rose & Basri, 2019). The colour of plant also supplied to the aesthetic value (Ma et al., 2020) and visual enjoyment (Güngör & Polat, 2018). Red flower bedding able to induce the feeling of excitement (Wydra, 1997) where green flower bedding promote calmness to the people (Mohamed, 2009). In another study, Muratet et al. (2015) generally highlighted that plant richness, species, and its naturalness affects the well-being of the park user in France.



**Figure 2.4: Plant bed**

Lawns (Figure 2.5) are commonly recognized as part of softscapes that provides aesthetic and recreational functions (Hedblom et al., 2017; Ignatieva & Ahrné, 2013; Yang et al., 2019). Mohamed and Othman (2012) topped that lawn or groundcovers were low-growing plant that also appreciated by the Malaysian. The presence of lawn also embraced by park user in China



(Fadiman, 2016; Wang et al., 2016) and Sweden (Ignatieva et al., 2017). Conversely, in Wan et al. (2021) research, the Hongkongers were found less appreciate presence of lawn. Public parks perception study discovered further that condition and lawn design are indicators that affect the preferences and satisfaction of user. For instance, the neat condition lawn was found to be preferred by patrons in China (Yang et al., 2019), Sweden (Ignatieva et al., 2017) and United States (Williams & Cary, 2002). In terms of design, the Swedish were found dislike monotonous colour of green lawn and prefer to have provision of other features such as benches, ornamental plant, water fountain, and playground to increase lawn attractiveness and functionality (Ignatieva et al., 2017).



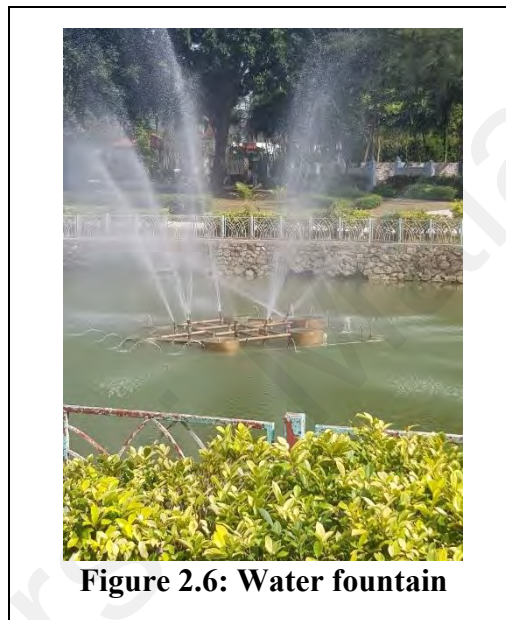
**Figure 2.5: Lawn**

#### **2.4.3 Design landscape - Hardscape (Water Fountain, Retaining wall & Fencing)**

Based on Shukur et al. (2012), water fountain (Figure 2.6), retaining wall (Figure 2.7), fencing (Figure 2.8) and others. are examples of hardscape that presence in a park. Aliko-Myrto (2010) denoted that water fountain is profound as part of waterscape appear in park that added on the park aesthetic value whilst stimulates sense of touch and audio satisfaction. McCormack et al. (2010) determined the feature such as water fountain is deeply appreciated by park user from United States, Australia, Scotland, Spain, South Africa, and Canada. Riki



et al. (2016) also found presence of water fountain in park located within Zahedan, Iran positively correlated to the park user satisfaction. In Malaysia, Othman et al. (2008) found that water fountain is favoured by many park visitors in Malaysia and it as visitor pointed that they felt relax and enjoyed when come in contact touching or listening to splashing sound of water. In Turkey, Düzenli et al. (2014) furthered that water element such as water jet fountain and interactive water fountain is preferred by their park goers.



In terms of retaining wall and fence, generally, any wall constructed to restrain soil or other materials at an angle is described as a retaining wall (Brooks & Nielson, 2013). In the early 80's, Schroeder (1982) found that park user dislike fence in the park as it broke the naturalness of park. However, more park user from other countries prefers the provision of fencing. For instance, in the Iranian society, Goodarzi and Haghtalab (2016) found that the people fancied a define place of recreation area with presence of fencing, where the Egyptian preferred presence of fence to prevent the enter of undesirable person (Abdelhamid & Elfakharany, 2020). Similar to Malaysia, retaining wall is highly preferred element in a park by Malaysian in Shukur et al. (2012) study.

Fence is a man-made physical structure that separates two areas of land (Oxford English Dictionary, 2001). Concrete, iron, shrubs (Abdelhamid & Elfakharany, 2020; Madden, 2010), bricks (Tibesigwa et al., 2020), hedges (Hilborn, 2009) and others were examples of wall and fencing material used in park. Wall or fencing in a park is to ensure safety (Abdelhamid & Elfakharany, 2020; Kimic & Polko, 2022) and comfortability (Watts et al., 2011) of park user.

Further research on wall and fence is discovered related to its height, for instance, Watts et al. (2011) suggested a two (2) metre height of fence or wall to ensure comfortability of park user in the United States. It is believed that this height could screen out noise arise from outside the park (Watts et al., 2011). In Egypt, Abdelhamid and Elfakharany (2020) suggested user prefer of tall fence at two point five (2.5) metre height to prevent undesirable person. From the aspect of separation between recreation area within a park, Goodarzi and Haghtalab (2016) discovered that waist height is most preferred fencing height compare to knee height due to good view of surrounding within a park.



**Figure 2.7: Retaining wall**



**Figure 2.8: Fencing**

#### **2.4.4 Children Playground**

Children playground (Figure 2.9) were also well embraced in several continents (McCormack et al., 2010). In the middle eastern region Riki et al. (2016) found that having playground affected the satisfaction among the Iranian. Children playground is also considered as facility that influenced the preferences among the Poland (Pawlikowska-Piechotka, 2010), Americans (Parra et al., 2019), Dutch (van den Berg et al., 2022; van Vliet et al., 2021), and Malaysian (Anuar & Muhamadan, 2018; Maulan, 2002; Othman et al., 2008; Sreetheran, 2017). In China, Liu and Xiao (2020) proved that provision of children's playground had supplied to enjoyment to Chinese dwelled in Shen Zhen. However, at a larger scale, van den Berg et al. (2022) found that playground was not valued in China. Nonetheless, having of children playground is still essential in many communities as Chow et al. (2016) mentioned that for a small region like Hong Kong, regardless of park size, children playground is an important provision of facility in all park.

Playground is an important feature for parents-child bonding as well as social place among parents. Maulan (2002) pointed out that, children playground is a place that promoted family togetherness, allowed parents to relax taking break from attending closely to their child and it also allowed parents to chit-chat with each other while watching over their playing kids. Othman et al. (2008) also emphasised that children playground is preferred by patron due to its vibrant colour, well-arranged structure and its openness. Children are naturally sensitive to colour (Safferman, 2015) and colour had found impacted their feeling. According to Boyatzis and Varghese (1994) children felt excited and happy when they exposed to pink, blue, and red colour. Recently, Safferman (2015) found that children felt excited when

exposed to yellow and red colour and calm when exposed to blue colour. Despite finding varied little but in general these colour gives positive feeling to the children.

A well-organised and open playground facility supplied to preferences on park user (Othman et al., 2008). Playground with sufficient open space accommodated running children and promoted visual access for the adult overseeing their playing children (Othman et al., 2008). Ample of space was found favoured by kids who attended to playground in Dr Jordan Park, Poland claiming they liked the huge space in the park which allow them to run around (Pawlikowska-Piechotka, 2010). Ishii-Kuntz (1990) asserted that social interaction between adult positively related to well-being regardless of age. Thus, in order to foster the socialisation among parents, Whole Building Design Guide (2017) suggested that a social zone furnished with basic amenities shall be constructed to encourage the interaction.

Pawlikowska-Piechotka (2010) mentioned that it was indubitable that provision of children playground gave improvement on children's physical and mental health as well as their overall well-being. Ministry of Health Malaysia (2013) asserted that playground prevented obesity, strengthen children's bone, joint and muscle health, and reduces symptoms of depression and anxiety within children. In addition, Parra et al. (2019) even recommended the installation of multigenerational playground. According to Blümel and Amort (2016) multigenerational playground referred to playground that spatially connect people from all ages.



**Figure 2.9: Children playground**

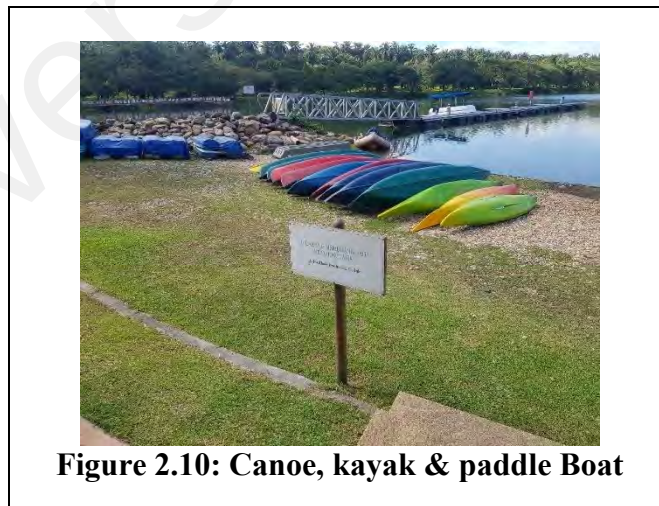
#### **2.4.5 Water Activity Facility (Canoe, Kayaking and others)**

Presence of water encourage water-related activities such as boating, swimming, fishing, canoeing (Aswad et al., 2009; Sasidharan et al., 2005; Schneider, 2009) and kayaking (King County Park, 2011). Water related facilities were found affect the perception of park user. In China, study, canoeing in park excites many Chinese children due to its promotion on inter and intra personal development (Xu et al., 2022). Kayak is one of the popular water activity carried out in Portland public park located in North-western region of the United States (Needham, 2016). Conversely in the South-eastern part of United States, Mimbs et al. (2020) found that kayak much more of something than is needed by the user. In the eastern context, it is found that kayak is a determinant activity that affects user satisfaction and decision of return visit in Japan (Romão et al., 2014).

Subsequently, lake swimming is generally prevalent water activity in the western context where fishing activities in park is more prevalent in the Asian context (Gobster, 2002). This is parallel to Othman and Jafari (2019) findings where in Malaysia, though it is a small number but there is still relatable amount of angler whom prefer fishing in the park lake.

Shah Alam Lake Garden is one of the public parks that is open to public park for fishing activities (Chua, 2024). Based on stipulated water activities, certain facilities are required to accommodate the recreation activity.

Subjected to park, in Malaysia, Putrajaya Coporation (2019) mentioned that the park contained facilities such as canoe, kayak, and paddle boat (Figure 2.10) to accommodate boating and angling activities. Extended facilities may also support intended recreation activity. For instance, angling activities may require fishing gear. Fishing rod and reel, fishing line, hooks, baits were examples of extended equipment that support angling activity. Wisconsin from the America is example of state that loan fishing equipment for angler to fish in a park (Wisconsin Department of Natural Resources, n.d.). For canoe and kayaking, extended equipment that support the activity may include helmet, life jacket, paddle and others (Victoria State Government, 2021). Therefore, the water recreation activities require a wide range of supportive facilities to enable park users to enjoy their intended activities.



**Figure 2.10: Canoe, kayak & paddle Boat**

#### **2.4.6 Tracks and path**

Park tracks and path (Figure 2.11) such as cycling track and jogging path are preferred by people from different country. For instance, in Malaysia, Maulan (2002) mentioned walking and jogging using jogging tracks are active recreational activity most embraced by the park user. This is similar to the United States where Parra et al. (2019) pointed that walking and jogging are the most preferred activity carried out by the patron in a park. In Iran, a laid down track such as walking path is deemed affected satisfaction and appreciated by many park users (Goodarzi & Haghtalab, 2016; Riki et al., 2016). In addition, Ghani et al. (2018); Zainol and Au-Yong (2016) also found that Malaysian youth attended to park mostly for walking and also riding bicycle. Therefore, it is found that bicycle track (Maulan, 2002) and rental (Fang et al., 2011) were preferred facilities by the park user to satisfy their cycling needs. In Turkey, similar to Malaysia, Turkish uses walking track and cycling tracks extensively regardless of age (Lapa, 2013).

However, the appearance of these tracks or path is subjected to design from the authority. It may or may not suit visitor preferences. For instance, Cohen and Leuschner (2019) accentuated that in the United States, path such as walking loop accommodated the preferred activities especially among the adults and the seniors. Conversely, the Dutch appreciate the provision of path however it has been specified to main path, side path which is branched from main path is not preferred in a park (van Vliet et al., 2021). In addition, senior citizen from Gyeongsan City, Republic of Korea revealed their purpose attending to park is to relax and have a walk anyhow they would like to have a wider walking path and wider bicycle path (Lee & Kim, 2015).



In some parks, there is only provision of jogging path and cyclist have no choice but to use jogging path for cycle. It is dangerous as cyclist might clash on to pedestrian. This concern was raised by University of California Los Angeles (UCLA) (2014) where senior patron were worry when they using the jogging or walking path, the young jogger or cyclist might crash into them leading to undesirable injuries. Therefore, senior patron would like to have parallel facilities which is a split section from jogging path that caters for slow walker (University of California Los Angeles (UCLA), 2014). With absence of this consideration, senior patron will reduce their visit to park for exercise due to fear (University of California Los Angeles (UCLA), 2014). Reduce visit may reduce physical activity which also may affect a person's physical and mental health. Levinger et al. (2018); Richards et al. (2015) confirmed that physical activity is proven associated with mental well-being. A physically more active person always associated with better mental health.



**Figure 2.11: Tracks and path**

#### **2.4.7 Outdoor Gym Facilities**

Outdoor gym facility (Figure 2.12) is example of fitness zone that provide recreational opportunity to teenage, adult, or elderly (Cohen et al., 2012) and had been progressively



provided in many places in the world (Jansson et al., 2019). In Taiwan, Chow (2013) discovered that Taiwanese elder appreciate the provision of outdoor gym facility despite outdoor gym is not the main facility use during their park visit. Conversely, (Lee et al., 2018) reviewed across Australia, Canada, Brazil, Taiwan, China, United States of America (USA), and Chile found that outdoor gym facility is primarily used by adults and older adults whom concerned on the return of healthier body and social connection.

Earlier on in the study of the Australian society, Furber et al. (2014) found a deep appreciation of the outdoor gym after it had been installed and Cranney et al. (2016) found gym tool is very well attended by senior patrons. Similarly, in Chengdu China, Fu (2013) found that outdoor gym research often related with senior patron. Conversely in Turkey, people regardless of age also attended extensively on fitness equipment (Lapa, 2013). In the case of Malaysia, Maulan (2002) discovered that the Malaysian park patron prefers to have gym tool to engage in active recreation. Razak et al. (2016) asserted that outdoor gym facilities are essential to address the park user need in Malaysia. To public park where outdoor gym facilities are provided, Anuar and Muhamadan (2018) found that the facility is quite well attended by the patron. Despite outdoor gym facility may not be the primary intention of people visiting the park or might be only specific age group of people utilising, it is generally still important to be provided in a public park.

Cranney et al. (2016); Furber et al. (2014); Jansson et al. (2019) asserted that the study on gym tool in related to well-being is limited. Australian prefer to be sedentary than of being active, but after gym tool were installed in nearby park, there is a significant increase of physical activity from people of all ages (Cranney et al., 2016). Chow (2013); Furber et al. (2014); Jansson et al. (2019) also found that park patron who exercises using gym tool in

park felt they are physical stronger or mentally healthier. Gym tools provide in public park shall be suitable for all ages therefore, the type of gym tools provided shall not be as sophisticated as in fitness centre, conversely, it shall be simple and easy to manoeuvre. Example of gym tool provide in a park include but not limited to arm stretch, shoulder wheel, air walker, waist twist, leg pliability developer, surfboard, arm wheel and bonny rider (Chow, 2013).



**Figure 2.12: Outdoor gym facilities**

#### **2.4.8 Recreational Facilities (Bicycle rental & horse riding)**

Present study related to bicycle is found focusing on the mode of transport to the park for instance in Bahriny and Bell (2021)'s study and motive to the park, for instance, in Ibes (2015); Schrammeijer et al. (2021)'s study. In Malaysia, bicycle rental facility (Figure 2.13) is available in Malaysia public park (Basri, 2011). Research on preferences related to bicycle in the park context were concern on the type of surfaces by cyclist. For instance, Gobster (1995) found that cyclist prefer an even asphalt path is preferred. Dizdaroglu (2022) research found that to ensure park user satisfaction, user demanded path dedicated for cycling and adequacy on facilities as well as bicycle parking spots. Bicycle renting does not confine to

only rent of vehicle but also other equipment. Helmet and locks are examples of equipment that could supply to use of cyclist (The University of Chicago, 2022).



**Figure 2.13: Bicycle renting facility**

Horse riding is one of the popular recreation activity in park such as Brisbane City in Australia (Rossi et al., 2012), Monsanto in Portugal (Santos et al., 2016), United States as cited in (Gong et al., 2015), Konya in Turkey (Güngör & Polat, 2017) and others. Even in Malaysia, park equipped with horse riding facility has the highest visitation rate (Sreetheran, 2017). Despite horse riding has been a preferred activity by many, the current research that found relatable to horse riding were on crowding (Westover, 1989) or conflict in use of trails with other users such as bikers, mountain bikers or runners (Algrim, 2017; Rossi et al., 2012; Wolf et al., 2015). Nonetheless, similar to bicycle, horse riding requires several equipment. According to Denai Alam Recreational and Riding Club (DARC) (2023), helmet, gloves, riding boots and others. were examples of riding equipment that could be rent separately or in a set.

#### 2.4.9 Outdoor Sport Facilities

Ghani et al. (2018); Maulan (2002); Zainol and Au-Yong (2016) pointed that people preferred visit park for purpose of individual or group sports which require the utilisation of sports field or court. Generally, sports activity is divided into outdoor activity which carried out using outdoor facility and indoor activity which carried out using indoor facility. According to Pyky et al. (2018), ball court is an example of outdoor sports facility. Football field (Young, 1995), basketball court (Evenson et al., 2019; Sadeghian & Vardanyan, 2015), volleyball court (Afzelia & Gunawan, 2022; Kim et al., 2018), tennis court (Razak et al., 2016) and others are often build outdoor in a park.

Based on present perception study, it is found that football (Figure 2.14) and basketball (Figure 2.15) were outdoor sport facilities that mostly participated when people attended to a park. Kwon et al. (2020) asserts that football is of the popular team sport in the world. Thus, it is found that the Malaysian (Maulan, 2002, 2015; Sreetheran, 2017; Zainol & Au-Yong, 2016), Americans (Wall et al., 1999), China (Wu et al., 2018), Turkish (Yilmaz et al., 2011) and others prefer doing football while visits the park. Anuar and Muhamadan (2018); Cohen et al. (2007); Parra et al. (2019); Wu et al. (2018); Yilmaz et al. (2011); Zainol and Au-Yong (2016) found that people who visited the park preferred to play basketball.

In addition, Cohen et al. (2007); Wall et al. (1999); Wu et al. (2018); Yilmaz et al. (2011) found that tennis (Figure 2.16) is also a widely participated team sports in a park. Besides, Cohen et al. (2007); Wall et al. (1999); Wu et al. (2018); Yilmaz et al. (2011) also found that volleyball is also a preferred game to do by people during their park visit. Furthermore, *sepak takraw* court are popular pitch sports favoured among many Malaysian (Ghani et al., 2018;

Marzukhi et al., 2012; Omar et al., 2017; Sreetheran, 2017). Although *sepak takraw* being as one of the Malaysian traditional game, however, Anuar and Muhamadan (2018) discovered that user expressed that *sepak takraw* court is often underused compare to basketball court.

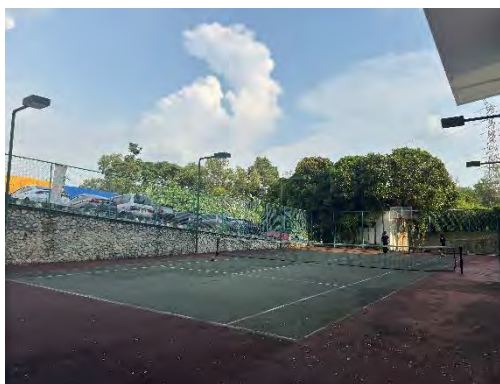
Present detail study towards mentioned sports facilities found were on the adequacy. For instance, in terms of takraw court, Ghani et al. (2018) found that park patron even request addition of *takraw* court for their recreational activities. In terms of football field, Omar et al. (2017) found that adequacy of pitches such as football field is found influence the user perception. The researcher asserted that it is crucial that sufficient pitches is provided to meet the demand of the user. Furthermore, Burillo et al. (2014) detailed that footballer preferences towards natural or artificial turf and conservation of turf.



**Figure 2.14: Football field**



**Figure 2.15: Basketball court**



**Figure 2.16: Tennis court**

#### 2.4.10 Indoor Sport Facilities

According to Pyky et al. (2018), sports hall is an example of indoor sports facility. Games that played outdoor can be played in indoor hall, for instance, basketball court (Cantwell, 2004), and volleyball court (Figure 2.17) (Evdokimoff, 2020), and *sepak takraw* court (Figure 2.18) (Sepak Takraw Association of Canada (STAC), 2023) can be built indoor. In addition, badminton (Figure 2.19) (Chin et al., 1995), futsal (Figure 2.20) (International Olympic Committee, 2021), table tennis (Figure 2.21) (Wang & Wang, 2020) are considered as indoor game.

Badminton (Chen et al., 2016; Sreetheran, 2017; Wu et al., 2018; Zainol & Au-Yong, 2016), table tennis (Chen et al., 2016; Parra et al., 2019; Wu et al., 2018) and futsal (Kwon et al., 2020; Omar et al., 2017; Sinatra et al., 2021) were among the most participated indoor team sports involved by park goer during their park visit. The current user perception research on indoor hall is found related to design of badminton court. For instance, Shi et al. (2021) explored user preferences towards background colour and Lee et al. (2015) researched on lighting towards badminton court. In addition, Shi et al. (2021) mentioned that indoor sport recreation facilities shall contain facility such as lighting, air-conditioning, rest area and drinking area.





**Figure 2.17: Volleyball court**



**Figure 2.18: Sepak takraw court**



**Figure 2.19: Badminton court**



**Figure 2.20: Futsal court**



**Figure 2.21: Table tennis**

#### **2.4.11 Park Furniture (Gazebo, benches, and others.)**

Rauf et al. (2023) stated that gazebo (Figure 2.22) is part of park furniture commonly made available in public park. Having gazebo in a park contributed to a park quality (Harjanti, 2020) and it is widely utilised by young park patrons in Indonesia whom valued

comfortability given by this facility (Wazir, 2019). In Malaysia, Anuar and Muhamadan (2018); Othman et al. (2008) discovered that provision of gazebo in a park is found appreciated by the people. Gazebo is important to support passive recreational activities (Anuar & Muhamadan, 2018). Socialising, sitting, viewing of nature are examples of passive recreation activities (Maulan, 2002, 2015). Besides Malaysia, Amraotkar and Gangopadhyay (2023) found that provision of gazebo strongly affected the preferences and satisfaction of park user in India. In addition, gazebo is also widely preferred facility by seniors in United States and Taiwan (Alves et al., 2006; Huang & Huang, 2019).

Based on Makalew et al. (2023), a park gazebo is an open-sided and roofed facility. It gives sense of welcoming, provides shades and seat that allow enjoyment of scenic view, social gathering, restoration and refreshment (Alves et al., 2006; Leverette, 2020; Othman et al., 2008; Perumal & Rahman, 2016; Thompson & Travlou, 2007). In Malaysia, Gazebo is known as *wakaf* which is a structure that may exist in hexagonal, octagonal, turret or square shape. There are two types of gazebo: free standing gazebo (Leverette, 2020) and gazebo with seats. There have been further studies conducted on the design and placement of gazebos.

According to Othman et al. (2008), gazebo with seat is one of the strongest preferred landscape element that welcome the patrons and allow people to seat relax, gaze scenic view and encourage social engagement. Perumal and Rahman (2016) further explored preferences on of seating design found that park patron voted high for gazebo that not only equipped with seats but also with table. Gazebo equipped with seats and table symbolised the local lifestyle and allow small group of people for social gathering (Perumal & Rahman, 2016). When patrons has special feeling towards an object or place, in this case gazebo, it is said to be associated with place attachment (Hidalgo & Hernández, 2001) which is a psychological



concept relate to sense of belonging that promote peoples' physical and psychological health (Ujang et al., 2015).

Amraotkar and Gangopadhyay (2023) pointed out that placement of gazebo is crucial in affecting the preferences and satisfaction of park user. Gazebo is suggested to build near children playground so that it enable parents to rest and socialised under shade (Thompson & Travlou, 2007). University of California Los Angeles (UCLA) (2014) further pointed, gazebo stationed along walking path able to promote physical activity of elderly people in North America, Europe, and Asia. People looked for place to rest when they felt exhausted while exercising, gazebo is an ideal facility to motivate them keep moving until they reach this desired resting point. Therefore, it able to increase of physical activity of a person and ultimately boost their physical health. Furthermore, Chen and Wu (2009) recommended that gazebo that build near to natural feature such as water or plant to promote relaxation where Deng et al. (2020) addressed that gazebo build near natural features enhance psychological restoration.

Rauf et al. (2023) also pointed out that seating (Figure 2.23) are part of park furniture made available in a public park. In terms of seating, Luximon et al. (2015) asserted that benches are the most common form of seating. Benches were also appreciated in areas within the park by the community in western country such as United States, Australia, Scotland, Spain, South Africa, Canada (McCormack et al., 2010), and Netherland (van den Berg et al., 2022; van Vliet et al., 2021), middle eastern countries such as Iran (Goodarzi & Haghtalab, 2016), and Dubai (Jung et al., 2022), and Asian country such as Malaysia (Maulan, 2015).

Bench is a physical feature that influence active and passive activities (Mumcu & Yılmaz, 2016). Özen Turan et al. (2016) pointed that bench offered as a resting place for the seniors when visit the park in Turkey. In Malaysia, Maulan (2002) pointed out that park user in Malaysia needed provision of benches allow family and social interaction. Mumcu and Yılmaz (2016) wrapped up that seating is required as a support to people's public life in open spaces. Further research has found that the bench arrangement, placement, adequacy, design, and material have been found to influence the user experience.

In terms of arrangement preferences, it varied across individual. There is people who prefer sits alone and people prefer sit with friends, thus, it is vital to provide seating that accommodate their preferences (Mumcu & Yılmaz, 2016). Straight benches (Mumcu & Yılmaz, 2016) or circular bench rounding tress or flower (Marcus & Francis, 1998) suitable for individual who prefer to be alone. For individual who wants to socialise with another individual or more, arrangement of benches in the shape of concave (Huang, 2006; Marcus & Francis, 1998), convex (Huang, 2006), L-shape at right angle corner (Marcus & Francis, 1998), or together with small table (Gehl, 2010) encourage socialisation meanwhile provide comfortability for chatting. On top of stipulated group seating, Huang (2006) determined that concave seating has greater associated on social interaction of the people. This finding also supported by Luximon et al. (2015) where circle style seating enhance social interaction between one and other.

Placement of benches can affect satisfaction of user (Anuar & Muhamadan, 2018; Huang, 2019). A wrong placement of benches could affect user's comfortability. Usually, people prefer seating to be placed along or within facade and spatial boundaries to watch other people, to glance at water related feature and plant and others. Mumcu and Yılmaz (2016).

Spooner (2014) mentioned that seating under comfortable climate with visual access to nature supplied to mental well-being of the person. This statement aligned with Carr et al. (1992) whom claimed seating under shade supplied to high degree of physical comfort and when a person feel comfortable, he or she will feel relax. Equally important, benches placed under trees that provide shade in playground facilitate parents or caregiver watching over their playing children is necessary (McCormack et al., 2014) as this able to support parent-child interaction functionality (Huang, 2019).

Besides, adequacy of seat is vital to fulfil user need (Spooner, 2014). Özen Turan et al. (2016) mentioned that inadequate of seating in a park contributed greatly to user dissatisfaction. In Turkey Rize Municipal Park, park patron of forty one years old and above has rising concern on adequate seating area and more than half of more than 70 years old patron came to the park to rest on park seats (Özen Turan et al., 2016). In Malaysia, patron claimed presence of sufficient seat is deeply required to support their family and social activities (Maulan, 2002). Therefore, seat do not only promote relaxation but also encourages interaction between people. People will feel relax talking to each other and reduce psychological distress and ultimately increase their mental health (Cohut, 2018). Whyte (1980) suggested seat shall be provided in every three metre interval in an open space where seat is ideal for placement. Spooner (2014) suggests seat number shall be adequately provide to at least five percent of total park visitor.

In terms of design and material preferences, Gehl (2010) emphasised that children and young people do not have particular design preferences, they sit wherever they wanted to, conversely, adults and seniors preferred seating that provides comforts to them. Senior preferred seat with backs and arms in assisting their posture (Gehl, 2010) and other further

assured seating with backs is important in assuring their psychological dissonance from violence such as back attack (Gehl, 1987). On material preferences, Marcus and Francis (1998) suggested that wood is a comfortable material for seating as wood does not give chilly feeling to the sitter compared to material such as concrete, metal, tile or stone. Hadavi et al. (2015) in a preference study further enhanced that wooden seating is found to be preferred by many users due to its comfortability. Besides, seat shall be able to withstand ever changing weather (Mumcu & Yılmaz, 2016) as condition of benches also affected satisfaction of user (Anuar & Muhamadan, 2018). A broken bench will be less appealed to the user and might result in dissatisfaction and hence deter its usability. Despite stone benches reduce comfortability, Perumal and Rahman (2016) found out that there were park patron still prefer stone benches.



**Figure 2.22: Gazebo**



**Figure 2.23: Seating**

#### **2.4.12 Picnic and camping area**

Getting in touch with nature is more important today as people live in a more stressful environment, and parks can provide them with the opportunity to liberate their tensions (Yılmaz et al., 2011). Picnic area (Figure 2.24) is a rising important feature for user to get in contact with nature and promote health. In United States, picnic area is one of the most preferred nature-based passive activity by the Americans (Chavez & Olson, 2008; Parra et

al., 2019; Payne et al., 2002). There is no much differences in Malaysia where picnic area has become typical facility in a park (Ghani et al., 2018) and it is one of the ideal place in park for family bonding (Maulan, 2002, 2015; Ujang et al., 2015) and company team bonding (Maulan, 2002). Picnic promote cohesion between or among individual by allow them socialise with each other (Maulan, 2002). A side from socialising, picnic area soothed pressure away from individual (Chow et al., 2016). Relax promote mental health and socialising with another individual regardless friends or family allow strengthening relationship and hence achieve well-being such as psychological health. Study on preferences of picnic is placement and partly facilities related.

Presence of natural assets around picnic area may affect users' satisfaction (Yilmaz et al., 2011). Therefore, preferences on placement of picnic area shall take into account to prevent underutilisation of given facility. Preference on placement of picnic facility varied across country. In United States, some picnicker prefers picnic area provide in area with vast openness (Payne et al., 2002) where in Switzerland, there are two groups of picnicker with one prefer wilderness who wish to have their picnic site placed close to wilderness such as next to stream and another prefer official site that close to road (Hegetschweiler et al., 2007). Turkish according to Yilmaz et al. (2011), picnicker prefer picnic near nature such as waterfalls, grass and wooden fields, where in Malaysia, Maulan (2002) pointed presence of nature such as lake attracts picnickers. Placement of picnic area near nature improve psychological health as Schroeder (1991) mentioned nature surrounding include water able to calm an individual. Malek et al. (2015) recommend placement of picnic area near main road encourage disabled to pay visit.

Adequacy of recreation facility may affect users' satisfaction (Yilmaz et al., 2011). Picnic and barbeque activities often conjoined (Chavez & Olson, 2008; Malek et al., 2015). They came together to support the function as whole. McCormack et al. (2010) furthered that country from North America, Europe, Africa, and Oceania preferred the provision of barbeque and picnic tables. Identically, Muderrisoglu et al. (2010) whom discovered that having barbeque facilities in picnic were important to the community in Ankara, Turkey. Generally, barbeque area or picnic area also equipped with seating apart from barbecue pit or tables. For instance barbeque area in Singapore (National Parks Board, 2022a) and picnic area in Australia (Parks Victoria, n.d.).

However, Hegetschweiler et al. (2007) raised an issue that in Switzerland, inadequate barbeque facility led picnicker setting their own barbeque pit on ground and caused damage to the places. Therefore, provision of adequate picnic facility is vital for to support this activity. Needs on barbeque facility was found from two diverse groups, one prefer natural barbeque facilities such as stones fire ring and log as seats while another prefer man-official facilities such as concrete fire pits and benches (Hegetschweiler et al., 2007). However, picnic facilities in Malaysia are not as detailed as in Switzerland.

Picnic facilities are provided in quite some parks in Malaysia and has adequately becoming one of the reason of public visit as Yahaya and Mohd (2013) confirmed picnic facilities has become a prominent feature attract patrons visits the park. The common picnic facilities mentioned in few Malaysia urban park study is picnic table. Placement, quantity and condition of picnic table was usually studied. Placement of picnic table was emphasised by Hussein (2018) whom stressed picnic table shall be place in an appropriate place that blend well with park environment for aesthetic purposes. Anuar and Muhamadan (2018) expanded

besides placement of picnic table, its quantity and condition shall be emphasised to meet demand of the patron. Yilmaz et al. (2011) once stress quality of facility provide may affect users' satisfaction. Besides, water faucet is vital provision to support picnic activity (Yilmaz et al., 2011). Malek et al. (2015); Malek et al. (2012) even suggested provision of electric or gas barbeque near picnic table to heighten usage of picnic area.

In addition, camp area (Figure 2.25) were also found demanded by park user from Maulan (2002)'s study. Tinsley et al. (2002) asserted from previous research that camp ground is well attended by many Americans. Similarly, camping were also one of the favourite recreation activity carried out by the South Koreans (Marshall et al., 2019). Studies that furthered on camp area are on its placement, design, and provision of complementary facilities. Placement of camp area in forest, near seaside and within public park are the attribute most appreciated by Malaysian camper (Mohd et al., 2005). Marion et al. (2018) stressed that camper prefer camp near water bodies such as lake, river or stream. These characteristic were preferred as it allowed people to enjoy natural surroundings and relief them from work stress which relate significantly with their psychological health (Mohd et al., 2005).

There were many studies that claimed association between psychological health with natural environment. Natural environment promotes psychological restoration by reducing stress, arousal and anxiety that a person is facing (Garst et al., 2009; Hartig & Evans, 1993; Kaplan, 1995; Knopf, 1983). Despite there was people prefer camped near to nature, there is also camper prefer placement of camp away from nature as Dumitras and Dragoi (2008) found that in Romania, although patrons to parks loved being contact with nature but they prefer campsite away from nature, placing near to park access road. Foster and Jackson (1979)

elucidate that a poorly satisfied camping area may offset by its presence of scenic view and presence of nature such as lake that allow fishing activities.

Design of campground also found associated with satisfaction of camper. Foster and Jackson (1979) found that in the United States, though individual camper satisfaction and preferences varied across another, however, in general camper more satisfied with arranged campground than of random campground due to need on adequate spacing with stranger. Conversely, Rodriguez (2017) found that in the United Kingdom, random campground not only does not affect camper satisfaction, instead, camper concerned more on return related to health and wellbeing. Besides, vegetation screening between each campsite also found affected satisfaction of certain campers. This finding supports previous study by Hall (1969) whom claimed space perception could be intervened by presence of vegetation that helped screened out unwanted sight. Camper do not like being close with other campers whom they do not know and make them felt personal space invaded. The notion always brought up by Marion et al. (2018) where they stressed campsite spacing affects preferences of camper.

Camper nowadays is looking for more comfort while camping thus Gursoy and Chen (2012); Janiske (1990) mentioned better equipped campground with facilities and amenities is always well embraced. In United States campers are divided into tent camper and recreational vehicle camper. Regardless the division, both wanted presence of amenities like drinking water, shower places, flush toilet, shade and picnic table to facilitate their camping activities (Cordell & James, 1973; McEwen, 1986). This is slightly similar to Taiwan where Gursoy and Chen (2012) also indicated that presence of toilet and shower are basics that influence visitation of Taiwanese. Gursoy and Chen (2012) further expanded that availability of open spaces, recycle bins, laundry facilities, cafeteria, active recreation facilities, tent renting



facility and barbeque grill also significant. Where in Malaysia, camper expressed that provision of toilet, dustbin, light and barbeque facilities are important in camping area (Mohd et al., 2005). Security is vital in ensuring safety of the camping site (Gursoy & Chen, 2012) and presence of light is salient in assuring the safety by reducing chances of illegal activity.



**Figure 2.24: Picnic area**



**Figure 2.25: Camp area**

#### **2.4.13 Washroom**

McCormack et al. (2010) asserted that bathroom were appreciated by many park users across several regions. Oxford English Dictionary (2001) defined that bathroom is an area generally equipped with shower, toilet, and sink. However, many park users requested toilet as basic. Restroom Association Singapore (2022) defined that toilet generally consist of water closet, urinals and wash basins (Figure 2.26). It is deemed important public facilities in the United Kingdom (Alves et al., 2008), Turkey, (Afacan & Gurel, 2015), Indonesia (Harjanti, 2020), and affected park user satisfaction in South Africa (Willemse, 2015) and Iran (Riki et al., 2016). Toilet is equivalent to washroom and restroom based on Oxford English Dictionary (2001). Liu and Xiao (2020) pointed out that washroom is an important sanitation facility that affect the recreation experience of park user in China. Further studies related to washroom in park are found related to its adequacy and placement.

Zhang et al. (2019) mentioned that washroom is considered health facility. Absence of these may deter human health. According to Zhou et al. (2019), number of washroom available has been affected the satisfaction of park user in China. Due to degrading health, senior citizen frequents to washroom more compare to younger generation hence the adequacy of washroom is crucial to cover needs of elder (Zhou et al., 2019). Similarly, in Hong Kong were people who visited park were mostly senior citizen, Mak and Jim (2019) pointed that golden-ager has requested for addition of more washroom in park. In the west, The need for more washroom is also found important among the Americans in (Gobster, 2002)'s study.

Besides, placement of washroom has been discussed in few preferences studies. Though toilet shall be place at easily accessible area within the park, however, there has been request in special activity area in the park for instances, In United States and Turkey, washroom shall be provided near camp area as camper to facilitate their camping activities (Cordell & James, 1973; Gursoy & Chen, 2012; McEwen, 1986; Yilmaz et al., 2011). Gursoy and Chen (2012) emphasised that besides washroom, presence of garbage bin is also important to support camping activity. This is similar in Malaysia where Mohd et al. (2005) pressed on importance of provision of washroom and garbage bin at camp area. A side from camp area, Yilmaz et al. (2011) stressed on placement of washroom at picnic area, park entrance (Zhou et al., 2019) and proximate to parking area (Malek et al., 2015) were found friendly to user access.



**Figure 2.26: Washroom**

#### **2.4.14 Prayer Room**

According to Hasan-Basri and Abd Karim (2016) prayer room (Figure 2.27) is an important amenity in a park. It is a basic provision for Muslim or Muslim majority country. Malaysia being a Muslim majority country is made up by 61.3% of Muslims (Department of Statistics Malaysia (DOSM), 2011), hence, prayer hall is a definite necessity. Muslims are obligated to pray five times a day, first prayer known as *Fajr*, second prayer known as *Dhuhr*, third prayer known as *Asr*, fourth prayer known as *Maghrib* and last prayer known as *Isha* (Dajani, 2019). In the Malaysian context, *Fajr* it is compounded to time close to 6am, *Dhuhr* is at about 1pm, *Asr* at about 4pm, *Maghrib* at a quarter after 7pm and lastly *Isha* at close to half past 8pm (Islamic Tourism Centre of Malaysia (ITC), 2020). Sreetheran (2017) discovered that Malaysian prefer to visit the park in the morning or evening. Hence, visiting in the morning might fall during *Fajr* and evening visit might fall during *Maghrib*. Therefore, to facilitate the worship prayer hall has become an importance amenity as Rizal and Syed Ariffin (2019) exerted provision of prayer hall has become common amenity within parks in Malaysia. In terms of provision of facility for *Solat* (entire worship process), Muslims are required to follow specific ablution (known as *Wuduk*) using water (Jabatan Kemajuan Islam

Malaysia (JAKIM), 2020). Hence, a water faucet is a complementary amenity make available for *Wuduk*.



#### **2.4.15 Signage (map, directional, information & education sign and others.)**

According to National Recreation and Park Association (NRPA) (2015); Project for Public Spaces (PPS) (2008) directional, information, park map, and educational signs are examples of signage that provides information about the park. Directional signs (Figure 2.28) are spasmodically installed and covered in most needed spots in the park especially within natural areas to ensure people feel safe exercise in the park; Information sign (Figure 2.29) contains details in organized programme such as tournaments, park event, and park's management plan; Park map (Figure 2.30) usually contained picture of entire park consisting indication on park boundary, features and facilities within, paths linkage, and rest location; and Educational signs (Figure 2.31) exhibited teaching nature to enlighten people such as on special species of flora or fauna (National Recreation and Park Association (NRPA), 2015; Project for Public Spaces (PPS), 2018).

According to Veitch et al. (2016), signage is an important feature in a park in ensuring park image as well as secure park user experience. Provision of signage increased the

consciousness of the park goer by alarming them from potential hazards (Choquette & Hand, 2021), assist in wayfinding (Shayestefar et al., 2022) and, education (Wu, 2016). In the United States, Fletcher and Fletcher (2003) confirmed that the availability of park signage correlated to the visitor satisfaction in a park. Similarly, in Malaysia, Jaafar and Tudin (2010) confirmed that having signage is a useful attribute in a park from the user perspective which affect its user satisfaction. Zengel and Turkseven Dogrusoy (2014) pointed out that signage is an important spatial tool that demanded by the Turkish and contributed to the community satisfaction. In Loukaitou-Sideris et al. (2016) study, researcher has pointed out that signage is deemed as a necessity for senior citizen in a park. Further research related to park signage is found related to its design, adequacy, and placement.

Demir et al. (2010); Jaafar and Tudin (2010) asserted that a key management factor that affects the satisfaction of users is the usefulness of the information provided. Signage is considered useful when message is effectively delivered. In order to effectively deliver a message, the signage or information required to be adequate, clear, accurate, and accessible. Demir et al. (2010); Fletcher and Fletcher (2003); Müderrisioğlu et al. (2006); Rosli et al. (2020) confirmed that the number of provision of sign and sufficiency of information are related to park user satisfaction. Wu and Wang (2017) pointed that sufficient sign allow user manoeuvre within park smoothly and Demir et al. (2010) detailed that inadequate sign led to park underutilisation.

Relating to information clarity, Mak and Jim (2018) asserted an unclear park signage may cause insecurity for instance, in terms of wayfinding, a vague sign may confuse park user with present location and unsure on nearby facilities available. Gemici (2019); Liu and Xiao (2020); Tonge et al. (2011) were studies that has confirmed that a clear signage is associated

with user satisfaction. Azenan et al. (2021) topped that apart from association with user satisfaction, park user tended to extend park visit duration when signage is clearly provided. Relating to accuracy, Howat et al. (1996) pointed out that up-to-date program information available on activities, results, events, and others. is crucial as the study confirmed that information accuracy affected user satisfaction. In addition, Burns et al. (2003); MacKay and Crompton (1990) also acknowledged that information provided required to be accurate as it affects the user satisfaction.

Relating to placement, Fletcher and Fletcher (2003); Mohandespor and Caymaz (2019); Wu and Wang (2017) asserted that the placement of park information are implication that ease the users' visitation process. Burns et al. (2003) identified and confirmed that ease of obtaining information affects satisfaction of user. Muderrisoglu et al. (2010); Riki et al. (2016); Tonge et al. (2011) expressed that park information provided should be easily accessible as it is deemed affect the users' satisfaction. The placement of park information such as at the entrance (Fletcher & Fletcher, 2003) , visually accessible area (Wu & Wang, 2017), and at decision point (Mohandespor & Caymaz, 2019) are implication that ease the users' visitation process.

Apart from adequacy, clarity, accuracy, and placement, it is found that the design of signage is worth considering. Loukaitou-Sideris et al. (2016) pointed out that it is essential for signage such as wayfinding signage complete with visual graphic and large font to the senior citizen as American Optometric Association (n.d.) pointed that vision degeneration are common among senior citizen. Wu and Wang (2017) suggested that the signage layout such as word sizing are crucial criteria in designing a signage. Mohandespor and Caymaz (2019) supported word sizing and added that signage's colour contrast is also related to the clarity and visibility

of signage. Generally, the signage acted to mediate or convey information to park visitor by providing information, directing people around a park, encouraging learning opportunities, promoting park maintenance, and establishing park rules.



**Figure 2.28: Directional signs**



**Figure 2.29: Information sign**



**Figure 2.30: Park map**



**Figure 2.31: Educational signs**

#### **2.4.16 Park Lighting**

Park lighting (Figure 2.32) is often associated as an important supporting feature in a public park. For instance, Rouhi et al. (2017) emphasized that park user satisfaction entailed an illuminated path. Lighted path is crucial in securing the park users experience. In general, all park areas should be illuminated within and around them as Goodarzi and Haghtalab (2016); Huang (2019); Özen Turan et al. (2016); Riki et al. (2016) mentioned lighting is one of the



park satisfaction factor in Iran, Taiwan and Turkey respectively. Jung et al. (2022) pointed out that lighting which consider park facility that led people to the park and has affected the satisfaction of resident who walk to the park.

Presence of lighting in park are largely associated with perceived safety (Dugar, 2011; Goodarzi & Haghtalab, 2016; Jaafar & Tudin, 2010; Wickremasinghe & Hettiarachchi, 2022). Placement of light also found affect park user perception. Wickremasinghe and Hettiarachchi (2022) pointed that lighting shall be place in area where it lighted the intended area. Park features such as pathway, washrooms (Smith & Hallo, 2019), and greenery (Rahm et al., 2021) and others. were features in the park where presence of lighting is essentially crucial. However, presence of light itself may not be sufficient unless coupled with adequate number of lights.

Halkos et al. (2021); Mak and Jim (2019) asserts that insufficient lighting will lead to deterioration in park use. In Marzukhi et al. (2012) study, to prevent unwanted injury, patron demanded specifically that children playground need to install more light. Sufficient lighting in washroom is also found important as poor lighting raised users' feeling of fear being attacked (Afacan & Gurel, 2015). Also, camp area required to be provided and well-lit. Mohd et al. (2005) found that presence of light at camp site is crucial for camper. Gursoy and Chen (2012) Added presence of light ensured able to ensure security and safety of camp site.

Furthermore, Smith and Hallo (2019) study identified Correlated Colour Temperature (CCT) and brightness of lighting in a park affected park user perception. CCT is a one-dimensional metric designed to quantify the perceived visual quality of white lights (Durmus, 2021). Preferences towards CCT varied according to park features and subjected to park user



individual perception, for instance, yellowish white light preferred in restroom and amphitheatre at 3000 Kelvin (K) and less yellowish white light at 4200K is preferred along the park pathway in Smith and Hallo (2019)'s study. From the aspect of brightness, Smith and Hallo (2019) found that preference towards intensity of light hitting on pathway (1.4 Lux) were less than in restroom (10.5 Lux).



**Figure 2.32: Park lighting**

#### **2.4.17 Rubbish bin**

Besides previously mentioned washroom, rubbish bins (Figure 2.33) also part of sanitation facility that affected user recreation experience (Liu & Xiao, 2020). In a survey conducted by Dunnett et al. (2002) in London, United Kingdom, provision of rubbish bin is important safeguard the quality of the park environment as litter deteriorated the park environmental quality. Conversely, Borgers et al. (2007) found that among the Netherlander, the dustbin is least important in a park. However, a more recent study conducted by Schrammeijer et al. (2022) pushed back with claimed on the significant to provide Netherlanders more rubbish bins in park to meet the user preferences. Further research conducted on rubbish bin is found related to its adequacy, design, and placement.

Rubbish bin is an essential health facility in a park (Zhang et al., 2019). According to Liu and Xiao (2020) rubbish bin coded as facility that is fundamental to ensure the cleanliness of a park. Without presence of rubbish bin, littering may happen. The most common type of litter in parks is the food, drink, and recreational items people bring with them to eat, drink, or use for recreational purposes and not intended to bring home (Van Doesum et al., 2021). Littering is subjected to personal or social norms. Personal norms generally refer to self-realisation towards responsibility on keeping the park clean (Van Doesum et al., 2021) whereby social norms generally refer to society expectation that conform the behaviour of a person to keep the park clean (Wang et al., 2022). To create a litter-free park, presence of sufficient rubbish bin is deemed important to create a litter-free park. Despite Van Doesum and Staats (2022) pointed that too much rubbish bin within the park premise affect the beauty of park, nonetheless, studies had confirmed adequacy of rubbish bin is crucial (Krajter Ostoić et al., 2017) and has affected the perception of park user (Y. Wang et al., 2020). Talal and Santelmann (2021) and Wojnowska-Heciak et al. (2022) studies also found park user favour more rubbish bin in a park to keep the park clean.

Al-mosa et al. (2017); Van Doesum et al. (2021) has confirmed that there is an association between placement of rubbish bin and littering in park. Y. Wang et al. (2020) uncovered that location of rubbish bin has also found affected the satisfaction of park user. Researchers has mentioned that it is necessary to place rubbish bin near area where people gather (Brown et al., 2010) and in convenient location (Al-mosa et al., 2017). Park entrance, picnic area, entertainment area and others. were examples of high public traffic spot in park where more rubbish bin shall be placed (Wang et al., 2022). Furthermore, Schultz et al. (2011); Van Doesum and Staats (2022) stressed that distance of rubbish bin and littering is proportionately

correlated. The further the distance to rubbish bin may create more litter due to inconvenience in holding trashes.

Besides, Y. Wang et al. (2020) found that design of rubbish bin affected the satisfaction of park user. Design of rubbish bin may refer to physical design such as with or without cover, colour of bins that indicate collection of organic or inorganic waste, size of bins and others. Krajter Ostoić et al. (2017) also pointed that the quality of rubbish bin is deemed crucial to user who utilised green spaces. Quality of rubbish bin may concern on the product life-cycle. Product longevity may be affected by the material of product. According to University of Salisbury (n.d.), due the concern on sustainability steel bin is recommended in park as it is more weather resistant.



**Figure 2.33: Rubbish bin**

#### **2.4.18 Drinking Fountain**

Presence of drinking water (Figure 2.34) encouraged physical health of the people (New Zealand Ministry of Social Development, 2003). Krenichyn (2006) pointed that drinking fountain consider a basic facility that support the people. Park et al. (2012) found that in United States, more than half of park patrons used drinking fountain during their exercise. Akpınar (2016) added that provision of drinking fountain prolonged peoples' time spent in a

park. Similarly, in a study of urban park and perceived health benefit among senior patrons by Gaikwad and Shinde (2019), it is found that drinking fountain encourage senior patrons spend longer time in park and also facilitated their social process. Besides, park visitor with children appreciate the availability of drinking fountain for the children (Talal & Santelmann, 2021) and pets (Lee et al., 2009) to rehydrate while attending parks in the United States and China. Kabisch et al. (2021); Lee et al. (2018) Liu et al. (2020) also confirmed that satisfaction of park user affected by the availability of drinking fountain in Germany, South Korea, and China respectively.

Zaroff and Holmquist (2021) asserted that it is becoming essential to the public that having sufficient and accessible drinking fountain in the park. Adequacy of drinking fountain are essential for children and pet that walk and run around the park (Lee et al., 2009; Talal & Santelmann, 2021). In terms of accessibility of drinking fountain, generally it refers to the placement and quality of drinking fountain. For instance, Cordell and James (1973); McEwen (1986) emphasised that drinking fountain shall be placed near camp area to facilitate camping activities. Park et al. (2012) expanded that drinking fountain shall be easily access within the park especially playground area. Moreover, the quality of drinking fountain has been concern from the design aspect for instance number of sprout per drinking fountains (Wilson et al., 2018), bowl for pet (Wilson et al., 2018), height of drinking fountain (Güngör et al., 2016; Mohandespor & Caymaz, 2019), and safeness of water dispensed (Santos et al., 2020; Zaroff & Holmquist, 2021).



**Figure 2.34: Drinking fountain**

#### **2.4.19 Kiosk / Vending Machine**

The presence of kiosk (Figure 2.35) or vending machine (Figure 2.36) are found to be significant to the park user, for instance, Lee et al. (2009) asserts that vending machine is one of the desired facilities needed by park user while recreate in the park. Similarly, Liu et al. (2020) also pointed out that vending machine are amenities equally notable to elder person in China. In the case of Malaysia, Maulan (2015) discovered that park user demanded provision of food stall in the park. Park visitor preferred purchase food or beverages from kiosk in both Malaysia (Sreetheran, 2017) and Athens (Halkos et al., 2021).

According to Taib and Tazilan (2017), kiosk in a park is a small free standing building with need of manpower to offer services such as food selling or provide information to facilitate the utilisation of park user. Conversely, vending machine is an automated device that sell items such as food, drinks, tickets, and so on without the need of manpower to provide service to user (Ratnasri & Sharmilan, 2021). Presence of kiosk or vending machine is appreciated by people from all ages. For instance, presence of kiosk is appreciated by elderly (Kemperman & Timmermans, 2006) and parents with children (Nam & Dempsey, 2020) and

others. Generally, food and beverages were the items that park user looking for during their visitation to the park. For instance, Sreetheran (2017) stated that park user often purchased food or drink from the park's kiosks in Malaysia. Turkish youngster prefer to have kiosk that sells tea in a park (Çay & Oguz, 2016).

In related to kiosk, present study had identified that adequate number of kiosks in a park affected the perception and decision of park user. For instance, Goh and Mahmood (2016) pointed out that user demanded more number of food kiosk to accommodate the need for more user food choice selection has confirmed to be effectively lengthen the duration of user staying in the park. Less food selection may turn ones' down and hence leaving the park early in search for food. In terms of vending machine, placement of the machine is found studied. For instance, Jung and Chae (2019) pointed that coffee vending machine that place in area with high traffic crowd excellently encourage the socialisation of park user as park user brought drink. In general, vending machine that sell food is important in a park to promote local economy and social interaction between people (Gold, 1977).



**Figure 2.35: Kiosk**



**Figure 2.36: Vending machine**

#### 2.4.20 Summary of Provision Dimension of Identified Public Park Features and Facilities

Based on thorough study on the park user need, demand, and preferences, seven (7) dimensions which are adequacy, density, design, feeling, placement, safety, and species were found. Each of which is distinctly related to the nineteen (19) identified features and facilities is summarised in the following Table 2.3:

**Table 2.3: Summary of provision dimension of public park features and facilities**

| No. | Features and Facilities                          | Identified Provision Dimension from Literature review |         |        |                             |           |        |         |
|-----|--------------------------------------------------|-------------------------------------------------------|---------|--------|-----------------------------|-----------|--------|---------|
|     |                                                  | Adequacy                                              | Density | Design | Feeling (Comfort, health y) | Placement | Safety | Species |
| (a) | Natural Landscape                                | ✓                                                     |         | ✓      |                             |           |        |         |
| (b) | Designed Landscape – Softscape                   |                                                       | ✓       | ✓      |                             | ✓         |        | ✓       |
| (c) | Designed Landscape – Hardscape                   |                                                       |         | ✓      | ✓                           |           | ✓      |         |
| (d) | Children Playground                              |                                                       |         | ✓      |                             | ✓         |        |         |
| (e) | Water Activity Facility                          |                                                       |         |        |                             |           |        |         |
| (f) | Track or path                                    |                                                       |         | ✓      |                             |           |        |         |
| (g) | Outdoor Gym Facilities                           |                                                       |         |        | ✓                           |           |        |         |
| (h) | Recreational facilities (Bicycle & Horse Riding) | ✓                                                     |         | ✓      |                             |           |        |         |
| (i) | Outdoor Sports Facilities                        | ✓                                                     |         | ✓      |                             |           |        |         |

Table 2.3, continued

| No. | Features and Facilities                            | Identified Provision Dimension from Literature review |         |        |                            |           |        |         |
|-----|----------------------------------------------------|-------------------------------------------------------|---------|--------|----------------------------|-----------|--------|---------|
|     |                                                    | Adequacy                                              | Density | Design | Feeling (Comfort, healthy) | Placement | Safety | Species |
| (j) | Indoor Sports Facilities                           |                                                       |         | ✓      |                            |           |        |         |
| (k) | Park furniture (Gazebo, Benches and others.)       | ✓                                                     |         | ✓      |                            | ✓         |        |         |
| (l) | Picnic and camping area                            | ✓                                                     |         | ✓      |                            | ✓         |        |         |
| (m) | Washroom                                           | ✓                                                     |         |        |                            | ✓         |        |         |
| (n) | Prayer Room                                        |                                                       |         |        |                            |           |        |         |
| (o) | Signage (map, directional, information, education) | ✓                                                     |         | ✓      |                            | ✓         | ✓      |         |
| (p) | Park lighting                                      | ✓                                                     |         | ✓      |                            | ✓         |        |         |
| (q) | Rubbish bin                                        | ✓                                                     |         | ✓      |                            | ✓         |        |         |
| (r) | Drinking fountain                                  | ✓                                                     |         | ✓      |                            | ✓         |        |         |
| (s) | Kiosk/Vending Machine                              | ✓                                                     |         |        |                            | ✓         |        |         |

## 2.5 Park Maintenance Policy and Strategy

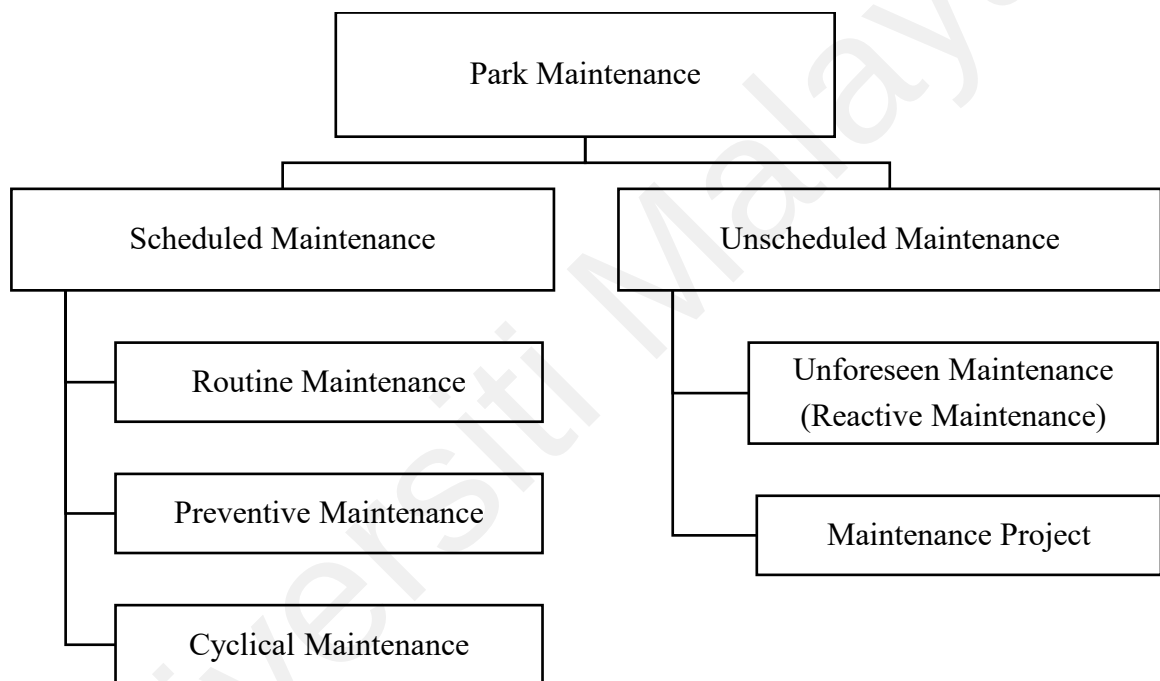
Based on park maintenance policy from Canada (City of Pitt Meadows, 2019; City of Whitehorse, 2015), and India (Government of Punjab, 2017), generally, park maintenance policy is a written document set out by the council contained objective and general principles related to roles and responsibility of park personnel, maintenance priorities which encompass resource allocation, safety of personnel and public, public relation, and maintenance operation standard. According to Lee and Scott (2009), maintenance policies are used as a guideline in planning of maintenance strategies. From the perspective of park recreation



maintenance strategies, Robert and Roger (1993); Warren et al. (2007) asserted that park maintenance include routine, recurring, major repair, minor repair, and minor construction work. Othman et al. (2008) suggest established of scheduled park maintenance. Later, Hurd and Anderson (2011) advanced that maintenance strategies in the recreation area are grouped into scheduled and unscheduled maintenance where scheduled maintenance include strategies such as routine maintenance, preventive and cyclical maintenance, conversely, unscheduled maintenance includes strategies such as unforeseen maintenance and maintenance project (Figure 2.37). Hurd and Anderson (2011) encapsulate categories and strategies of park maintenance as follow:

- (a) Scheduled maintenance: “Maintenance that contained simple predetermined checklist and specified time to perform the upkeep”.
- (b) Unscheduled maintenance: “Maintenance that react upon detection on need of maintenance arise or when parts deemed needed to be installed or worn out soon.”
- (c) Routine maintenance: “Maintenance that daily and weekly activities that preserve or improve the appearance of a facility or equipment to ensure beauty of recreation area.” For instance, sweeping of fallen leaves or flower occasionally to keep the park look clean and attractive.
- (d) Preventive maintenance: “The maintenance carried out through continuous attention and care to prevent expensive restoration (Warren et al., 2007) and ensure functionality, safety, and longevity of the facility.” For instance, playground equipment requires frequent inspection to safeguard the functionality and safety of children.
- (e) Cyclical maintenance: “Seasonal maintenance is repeated in cycles based on the season.” For instance, across late spring to early summer, maintenance such as top dressing of turf is recommended during this time (Rogers, 2008).

- (f) Unforeseen maintenance (reactive maintenance): “Maintenance that focused on minor repair or replacement when facilities reported worn out.” For instance, the changing of ball net.
- (g) Maintenance project: “Maintenance that focused on major repair or replacement which require planning beforehand.” For instance, replacement of lawn, replaced of flooring, rebuilt of entire path and others.



**Figure 2.37: Park maintenance categories**

Source: Hurd and Anderson (2011)

## 2.6 Park Features and Facilities Maintenance Operation

Gustavsson et al. (2005) mentioned from the park perspective, maintenance often correlated with the terms 'keep,' 'preserve,' 'conserve,' or even 'freeze' a facility. Maintenance is one of the dimension that affect quality of a park as CABA Space (2004) stipulate that quality of

parks is determined by how a park is managed and maintained besides concerning on how it is planned and constructed. Number of researchers also agree that green open space maintenance is one of the essential criteria subjugated under quality of green open space that affect its user (Ewing & Handy, 2009; Ewing et al., 2006; Karuppannan & Sivam, 2013). Dempsey (2008) confirmed that maintenance and quality of public space has an unswerving connection. Maintenance encompasses a number of land management strategies as well as the day-to-day activities needed to ensure a location's "fitness for duty" (Barber, 2005; Welch, 1991).

All park maintenance operation requires fiscal support to ensure that the park consistently provides its service to the people (Maland, 2012). Generally, park fiscal expenditure encompasses employee payroll and landscaping cost (Maland, 2012). According to National Recreation and Park Association (NRPA) (2021), employee payroll referred to the salary pay out to all recreation personnel where for landscape cost is cost incurred on park landscape maintenance. Similarly, The Trust for Public Land (2014) pointed that park fiscal expenditure related to maintenance of park landscape is known as maintenance cost or operating cost.

Tempesta (2015) pointed out that maintenance costs of recreational parks are based on the complexity of features or facilities provided. The more complex the features or facilities, the more expensive to sustain the park. According to The Trust for Public Land (2014) and (Tempesta, 2015), maintenance costs accounted 75 to 95% of the budget allocated to existing public parks in the United States and 85% to 95% in Europe. In Asia, National Parks Board (2011) asserted that the maintenance of landscape is the most expensive activity over the landscape life-cycle, and it is often overlooked.

Welch (1991) mentioned that park maintenance is a fundamental part of park management entailed ground upkeep of plant such as trees, shrubs, hedges, flowers and others. Ground upkeep is concern on maintenance of designed soft scape. Landscape maintenance is a more recent term in a park maintenance encompass all forms of maintenance in the park. In the United States, care for turf in lawn and field, tree, shrubs, flower, pathways, fountains, trash and debris removal, and natural area are considered under the umbrella of landscape maintenance in the United States (The Pennsylvania State University, 2018).

Similarly, in United Kingdom Moors Field located at Little Dunmow, tree, shrub, flower, grass, hedge, climber, hard landscape, leaf and debris clearance are considered under the umbrella of landscape maintenance (Eastern, 2023). Correspondingly, in Australia, parks or gardens landscape maintenance encompass vastly such as in maintenance on tree, garden beds, furniture, lawns, paths, fountains, tracks and others. (Department of Environment and Heritage Protection, n.d.).

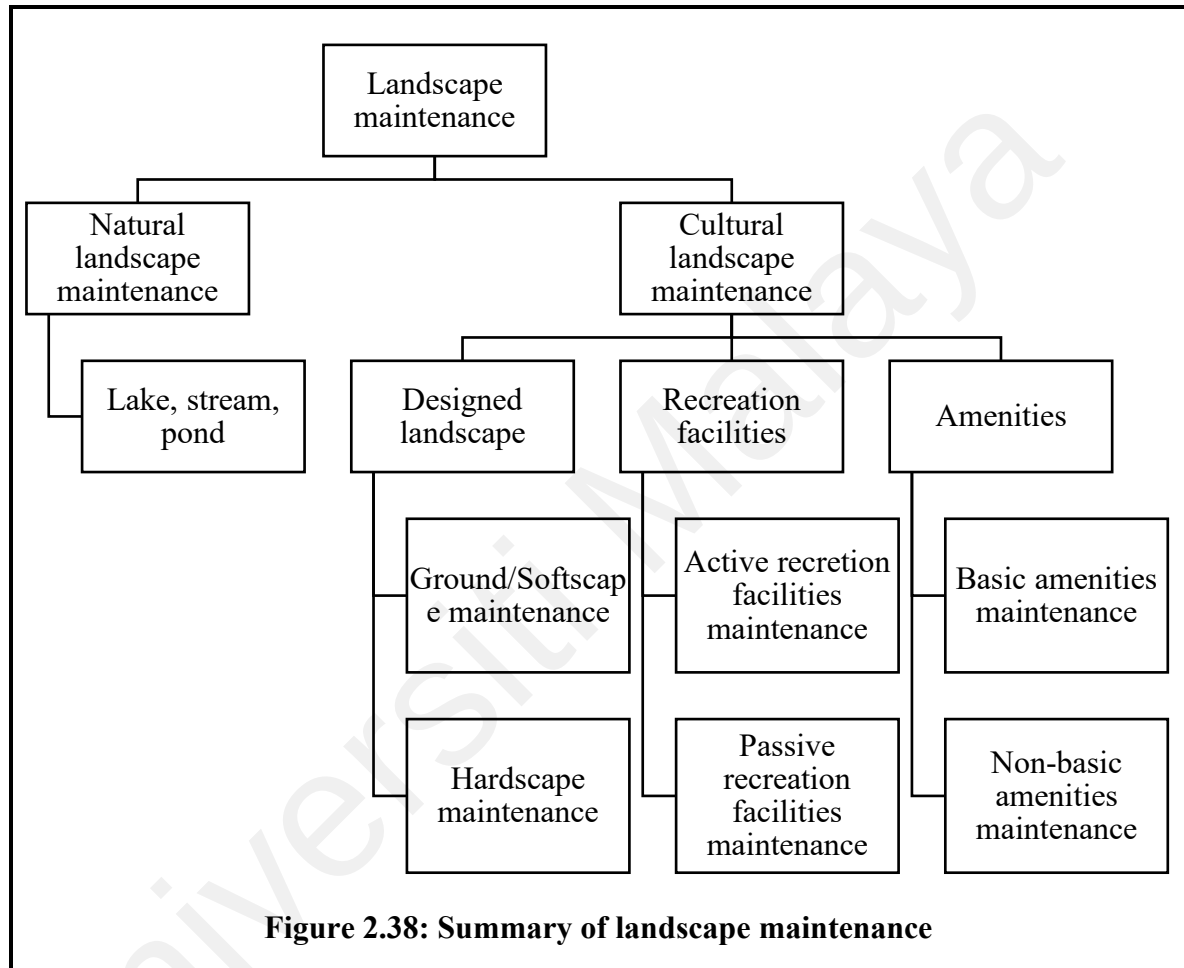
Kaymaz (2012) stressed that landscape is a constant evolving term that used to be modestly represent a scenery but later evolved into a term that exemplify natural and cultural landscape. Sauer (1925) postulated that natural landscape is made up by existing untouched earth surface for instance National Geographic (2020) listed out mountains, hills, lake, stream and others. are example of natural landscape. Domosh (2001) respectfully nominate Sauer (1925) as pioneer whom broached on cultural landscape with meaning it is a force which embedded within human that lead to involvement in shaping natural landscape. Little to no deviation on the definition of cultural landscape proximate after one century, Arntzen (2002); Espinoza (2019) defined cultural landscape is closely knitted connection between human and the nature.

Hussein (2014b) explained that cultural landscape is human intervention on the nature, for instance building and provide of gazebo or benches provided within the natural landscape.

Cultural landscape also known as designed landscape. In the Malaysian context, generally, landscape is divided into natural and designed landscape (Ahmad Shafee & Kamaruddin, 2019; Norlizawati et al., 2007). Based on Kendle and Forbes (1997), design landscape exhibit natural traits which involved human made-up. Norlizawati et al. (2007) added that designed landscape is a purposive fabricated landscape provided with intention to decorate and beautify a park. Design landscape is breakdown into soft scape and hardscape. According to Shukur et al. (2012), soft scape contains planting of tress, foliage shrubs, groundcover, trunk, aquatic plant, creepers plant, climbers plant, fruit tree, and annual plant. However, the United Sates Department of Interior pointed that designed landscape do not only confined in exhibiting its natural traits, it covers all façades that achieve of aesthetic values (National Park Service, n.d.). Thus, retaining wall, water fountain, and railing and others. were also among designed hardscape presence in a park (Shukur et al., 2012).

Public parks contain also recreation facilities to support intended activities. In general, park activities are classified as active or passive. In a research of public park in Malaysia, Maulan (2002, 2015) found that park goers frequently commit to active activities such as physical recreation and scheduled recreation, and that socialising, sitting, viewing of nature, were examples of passive recreation. Similarly, in the western context, Parra et al. (2019); Pineda (2014) categorised that preferred activity are usually coded in two categories namely, passive and active physical activity. Lastly, Whole Building Design Guide (2017) expressed that a social zone shall be furnished with basic amenities in order to encourage socialisation among people. There are various type of amenities such as washroom, garbage bins, light, drinking

fountain, stalls and others. Kumar (2014) categorised that drinking water, sanitation, and electricity belonged to category known as basic amenities. Based on present obtained information, landscape maintenance can be summarised and depicted as in the following Figure 2.38:



### 2.6.1 Maintenance Operation of Natural Landscape

Kurzi and Schroth (2018) asserted that water bodies are one of the main natural landscape features in public park. It acted as a medium that improved ecology by cleaning water, improved air quality, provided vegetation buffer between concrete building, a habitat for fauna, and allow human to connect with nature (Ahmad Shafee & Kamaruddin, 2019). In the west, invasive plant, algae, dead of aquatic animal such as fish, and foul smell due to

decomposition of dead organism are common issues faced by water bodies (City of Burnsville, n.d.). Whereas in Malaysia, common issue faced by the Malaysian water bodies in public parks are algae invasion due to human activities such as wastewater and industrial discharge (Juahir et al., 2018; Koh et al., 2019; Sharip & Zakaria, 2007).

According to City of Los Angeles (2020), water bodies maintenance includes water quality monitoring, debris removal and maintaining the floating plants. Generally, maintenance of water bodies involved mixture of schedule and unscheduled maintenance for instance monthly removal of invasive plant, inspection of water bodies every two years, and provide ad-hoc action such as replant plant. Some administrative body conduct inspection at a longer interval for instance, City of Burnsville (n.d.) addressed that the organization inspects ponds about every five years in order to ensure that water bodies function properly.

In the case of Malaysia, Sharip and Zakaria (2007) pointed out that the management information of water bodies in Malaysia is limited. According to National Landscape Department (2010), maintenance of water body such as pond in public park divided into two section which are structural maintenance and the second is mechanical and electrical maintenance. Generally, water body require daily routine cleaning and inspection on the structure and mechanical and electrical part of pond is advised to be inspected every three (3) months, maintenance work is executed when need arise (National Landscape Department, 2010). Despite however, it is found that, generally, water bodies are maintained in a scheduled way such as mowing grass, removing rubbish, and inspecting in every two weeks (Department of Irrigation and Drainage, 2012).

### **2.6.2 Maintenance Operation of Designed landscape – Softscape (Tree, Plant bed & Lawn)**

Park lawn is required to maintain besides for the benefit towards environment, it also serve aesthetic and recreational purpose for the user (Beard & Green, 1994; Sherratt, 2011). Lawn is found covered in park landscape and sports field (Sherratt, 2011). Ignatieva et al. (2015) mentioned that despite lawn is the feature that has high occurrence in public parks, however, information on management on lawn remained limited. University of Massachusetts Amherst (2016) outlined in the United States, best management practice on lawn or turf require to consider species selection, irrigation and water management, soil and nutrient management, mowing, traffic and turf cultivation, weed management, pest management, disease management, abiotic management, equipment management. Centre for Urban Greenery and Ecology (2013) mentioned in Asia-Singapore, common lawn maintenance includes mowing, weeding, aerating, fertilising, and dethatching. In Malaysia, mowing and weeding are related grass maintenance in public park (Klang Royal City Council, 2013).

The frequency of lawn maintenance depended on lawn's species. Centre for Urban Greenery and Ecology (2013) asserted that mowing is an operation that incurred most cost. Lawn mowing in United States, there is twice a week (Parks Division of Rowlett, 2014) or once times in every five days (Brownsville Parks and Recreation, 2015), whereas, in Australia mowing depended on the season and lawn height (Cameron, 2006), where Singapore (Centre for Urban Greenery and Ecology, 2013) and Malaysia (Klang Royal City Council, 2013) are once a fortnight. Weeding is the removal of unwanted wild plant. Depending on the species of weed, removal of unwanted occasionally done by using herbicide (Cameron, 2006; Tiwari et al., 2015). However, Tiwari et al. (2015) mentioned although herbicide effectively erase



weed, meantime it will injure young growing lawn. Hence, weed mechanically or by hand is recommend (City of Malibu, n.d.). In Malaysia, manual weeding which is opted (Klang Royal City Council, 2013). Au (2003) pointed that hand hoeing and pulling are example of manual weeding. Weeding is a non-daily task. For instance, park Roanoke Parks and Recreation (n.d.) and City of Malibu (n.d.) weed on weekly basis.

Aeration is a process that spiked hole on the grass to facilitate uptake of moisture and nutrient to the of the plant for its healthy growth (Tiwari et al., 2015). Kansas State University (2018) mentioned that the frequency of aeration depends on soil type as well as frequency of use. In seasonal country, warm season grass best to be aerated once or twice in a year during summer time (Kansas State University, 2018) where in tropical rainforest region, low use park aerates once in a year, a high traffic park or field is recommended to aerate in every one to three months (Centre for Urban Greenery and Ecology, 2011). Fertilisation is application of nutrient to the soil to enhance plant growth (National Parks Board, 2021). In the United States, application of lawn fertiliser is done twice a year during March and October (City of Malibu, n.d.), In Singapore, application of fertiliser is done once a month (National Parks Board, 2022b).

Dethatching is a process remove excess dead living shoots, stems, and roots between grass blade and soil (Landschoot, 2016). The layer of thatch may be both beneficial as well as detrimental to the lawn as according to Landschoot (2016), thin layer of thatch provides insulation and retain soil moisture where a thick thatch layer obstructs oxygen diffusion into the soil which will result lawn die out. Park District of Oak Park (2014) added that, dethatching shall be carried after mowing during fall season. Generally, detaching is usually carried out during specific time or when needed. For instance, City of Glendora (2018) set

out that lawn dethatching shall be carried out on March, April, July, or when needed. Similarly, Provo Parks & Recreation (2020) and Brede (2000) also mentioned that regular inspection on thickness of thatch is required and removed it when needed.

Lee et al. (2010) mentioned that generally pruning, fertilising, irrigating, planting, insecticide, cleaning of fallen leaves, petals and fruits are maintenance related to tree, shrubs and flower. Sulaiman et al. (2016) mentioned that tree maintenance usually involved pruning or thinning of outgrown crown or foliage and removal of died out branch or limbs, where the maintenance of shrubs or flower bed usually involve pruning, fertilising, and irrigation (Hwang, 2015). Harper (2017); Smith (2005) specified that pruning contains several objectives such as to increase plant health, reduce hazards, spike flower or fruit production, improve visual access, and maintain aesthetic of an area. Among these landscape features, Badrulhisham and Othman (2016) stressed that tree pruning is the most essential maintenance operation to ensure safeness whilst provide its aesthetic effect to the public.

Prior tree pruning operation, it is recommended to conduct inspection via visual survey in the (United States Department of Agriculture (USDA), 2000). In Singapore, tree inspection was done at least once in a year before pruning (National Parks Board, 2014) where in Malaysia, tree inspection is conducted in every six (6) months annually (National Landscape Department, 2010). Lee et al. (2010); Myers (2020); Smith (2005), pointed that pruning operation depend on season and species of plant. In seasonal country, Smith (2005) suggested evergreen trees suitable to pruned in end of dormant season during November or December where for flowering trees, pruning executed during summer.

Based on guideline provided by National Landscape Department (2010), pruning frequency in Malaysia subjected to tree species, for instance, fast growing tree is advised to pruned in three (3) to four (4) months, moderate growth tree advised to pruned in every four (4) to six (6) months, and slow growing tree advised to pruned in every six (6) to twelve (12) months. For shrubs or flower bed, in seasonal country, spring flowering shrubs required to be pruned after bloom, summer flowering shrubs required to be prune during winter and accidental removal of flower buds will occur if these shrubs were not prune at the correct time (Myers, 2020). In Malaysia, the pruning of shrubs and flower bed subjected to its species and growth speed, but generally, pruning is advised to be carried out once a month (National Landscape Department, 2010).

Fertiliser application is vital for trees, shrubs and flower bed in a park. Application of fertiliser improve tree and shrubs tolerance towards pest and weather (University of Wyoming, 2006), and stimulate better growth, health and aesthetics effects (Neal, 2018). Usually, tree or shrubs that planted in lawn require less fertiliser as the plant may absorb nutrient from lawn (University of Wyoming, 2006). Establish healthy tree and shrubs do not need frequent fertilisation (University of Wyoming, 2006). Only young (Clemson Extension Home & Garden Information Center, 2023) and unhealthy tree and shrubs required to be fertilised in annual basis (University of Massachusetts Amherst, 2014).

In seasonal country, The best time to fertilised tree and shrubs in the western country are during summer (University of Massachusetts Amherst, 2014) or spring (Clemson Extension Home & Garden Information Center, 2023; University of Wyoming, 2006). Whereas in Malaysia, subjected to species and condition of tree, shrubs and flower bed National

Landscape Department (2010) advised that tree shall be fertilised every four (4) to six (6) months where shrubs and flower bed are advised to be fertilised once a month.

All plants require water to survive, thus, irrigation or watering is an important maintenance operation to keep the plant alive. The wellness of plant requires to follow irrigation schedule (Torrecillas et al., 2018) to ensure plant obtains sufficient amount of water (Tennessee, n.d.) and prevent over irrigation which led to wastage of water, energy, and labour (Broner, n.d.). Utah State University Extension (2002) mentions that amount and frequency of irrigation depend on root system, plant size, weather, and geographical location. For instance, during summer time in Utah, United States, trees and shrubs are watered three times a month (Utah State University Extension, 2002), during winter time, irrigation operation when no precipitation in four to six weeks in Arizona (The University of Arizona, 2006). In Malaysia, trees, shrubs, and flower bed are recommended to be watered at least one to two times daily with one in the morning before noon and one in the late afternoon before dusk, however, in the event of heavy downpour, irrigation is waived (National Landscape Department, 2010).

In the event of tree, shrubs or flower bed getting old or died, removal and replacement with a new plant is required. This process known as planting (Lee et al., 2010). Trees will grow older and eventually decline as a result of pests, diseases, and environmental factors like drought or storm damage (National Parks Board, 2024). Aged or ill tree can disrupt natural forest system and poses danger to human safety, therefore, removal and replanting of tree is required (National Parks Board, 2024). Although ill or dead plant bed may not pose threat to human, however, Centre for Urban Greenery & Ecology (2015) pointed it played an important role in aesthetic of a park. A dead or ill shrubs and flower bed will affect the beauty of a park if left unattended. In Malaysia, the removal and replanting of aged or ill tree,

shrubs and flower in a public park is advised when there is need (National Landscape Department, 2010).

Pest and diseases are issues that are commonly suffered by tree and plant bed in a park. However, different tree or plant species are prone to different pest and diseases. For instance, Shamsul Kamar et al. (2023) identified that coniferous tree species planted in Taman Saujana Hijau at Putrajaya are commonly suffer from pest such as termite and diseases such as canker disease and foliar disease. Similar to prior pruning process where inspection is required, In Malaysia, park ranger is required to glance at tree and plant bed while patrolling the park and thorough inspection for infested pest or infectious diseases for tree is advised to done in every one (1) to three (3) months, where for plant bed, thorough inspection for pest and disease is recommended to execute in every three (3) months (National Landscape Department, 2010).

Generally, pruning process or factors such as aging or disease affected plant will cause falling of leaves, branches, or flower. Leaving these remains unattended make park looks unattractive (Martinez, 2022) and disrupt the park ecology for instance United States Geological Survey (USGS) (2016) pointed out that fallen leaves breakdown and release phosphorus that's flows into water body. High level of phosphorus in water causes algae grow excessively and inhibited oxygen dissolve into water which ultimately threaten the life of aquatic animals (United States Environmental Protection Agency (EPA), 2024). Therefore, it is necessary to cleaning the fallen remains timely. In Malaysia, National Landscape Department (2010) advised the racking of fallen leaves, branches, and flower is required to be conducted daily or whenever need arises.

### **2.6.3 Maintenance Operation of Design landscape - Hardscape (Water Fountain, Retaining wall & Fencing)**

The maintenance of water fountain subjected to the type of fountain present in the park. Generally, public park in Malaysia equipped with ornate fountain (Malaysia Tourism Promotion Board (MTPB), 2024) and jet fountain (Yunus, 2019; Zamlus, 2021). Ornate fountain is an elaborated fountain featuring sophisticated sculptures along its edge with water cascading from top to bottom (Orange County Pond Service, 2024) where jet fountain is equipped with enhance nozzle that projected upwards or at certain angle to spurt a stream of high-reaching wat to create aesthetic effect (Peszynski et al., 2019).

Orange County Pond Service (2024) outlined that the maintenance of ornate fountain generally involved cleaning of water pump in every three (3) months, scrub, and removal of water from fountain when there is dirt or algae built up and. In Malaysia, National Landscape Department (2010) advised that structure of water fountain shall be conducted in daily cleaning and inspection and maintenance of fountain's structural and mechanical and electrical component shall be done in every three (3) months or when required. For retaining walls and fencing, it is essential that they remain stable at all times and firmly attached to the ground (Auchter, 2016). In Malaysia, walls and fences are advised to clean daily and for maintenance such as replacing of worn out part is needed to be carried out in every three (3) months or when needed (National Landscape Department, 2010).

### **2.6.4 Maintenance Operation of Children Playground**

According to Brookhaven Parks and Recreation (2020); Regional District of Nanaimo (2002), playground is considered as of high-use facilities. Thus, all equipment in playground is

required to be inspected. In Canada, playground inspection is recommended to be done quarterly (Oklahoma Municipal Assurance Group (OMAG) 2020) where in the United States, inspection planned carried out differently. For instance, City of Malibu (n.d.) scheduled daily inspection, Brookhaven Parks and Recreation (2020) scheduled weekly inspection, Parks Division of Rowlett (2014) scheduled monthly inspection where City of Lake Stevens (2012) scheduled annual inspection.

In terms of playground maintenance, generally, maintenance of playground is conducted when needed (Brownsville Parks and Recreation, 2015; City of Lake Stevens, 2012), except on removal of foreign object such as litter or glass debris on the playground surface, Roanoke Parks and Recreation (n.d.) conducted foreign object removal at least once weekly where Brookhaven Parks and Recreation (2020) is daily. This is similar to Malaysia where playground is advised to be clean on daily basis and playground part is advised to be maintained every three (3) months or when need arises (National Landscape Department, 2010).

#### **2.6.5 Maintenance Operation of Water Activity Facility (Canoe, Kayaking and others)**

Maintenance of canoe is generally divided into maintenance of its interior and exterior. The external part of canoe is advised to apply a coat of wax to reduce visible scratches and allow canoe faster every time before canoeing, and after canoeing it is recommended to brush the exterior of the structure to clean all dirt and mud (Swift Canoe & Kayak, n.d.). In the event of scratches or rust occur, the tarnished area required to be painted in yearly basis (Maritime and Port Authority of Singapore, n.d.). The interior part of canoe is often made up by wood require maintenance such as sanding and applying oil at least two (2) to three (3) times during

paddling season to lengthen the wood life cycle (Swift Canoe & Kayak, n.d). Generally paddling season varied across location for instance, Colorado in United States mentioned April to September are ideal months for paddling (Maas, 2024) where Alaska stated May to September are ideal paddling season (Alaska Channel, 2025).

For kayak, the maintenance subjected to the material of hull. Kayaks made from fiberglass or polyethylene do not require routine maintenance. In fact, the only upkeep needed is sanding the hull when it appears worn (Kayarchy, 2024). Kayaks made of wood require cyclical maintenance, including applying a layer of oil to the wood surface every two to three years to help extend the wood's lifespan (Kayarchy, 2024).

#### **2.6.6 Maintenance Operation of Tracks and Path (Jogging / Walking / Cycling)**

Plastic track, bricks, cobble stone (Zhai & Baran, 2017), concrete, asphalt (United States Department of Transportation, n.d) are example of paving material for jogging, walking, and cycling activities. Similar to maintenance of tree, the upkeep of tracks and path requires inspection besides common maintenance. Generally, the inspection of concrete and brick requires inspection at least twice a year (Barcaldine Regional Council, 2014). Identically, Maricopa Country also inspect concrete walkway every six months (Maricopa County Parks and Recreation, n.d.). Similarly, in Malaysia, National Landscape Department (2010) advised jogging track shall be inspected in every six (6) months. In related to maintenance, it generally encompasses repair and cleanliness, and the maintenance operations varied across park. For instance, in Malaysia, daily cleaning of path is advised (National Landscape Department, 2010), likewise, tracks and path in City of Malibu park is clean up daily (City of Malibu, n.d.) where Maricopa County Park is clean up weekly (Maricopa County Parks



and Recreation, n.d.). In the event of damages, repair is carried out when needed (Maricopa County Parks and Recreation, n.d.; National Landscape Department, 2010).

#### **2.6.7 Maintenance Operation of Outdoor Gym Facilities**

Outdoor gym tool provide in a park include but not limited to arm stretch, shoulder wheel, air walker, waist twist, leg pliability developer, surfboard, arm wheel and bonny rider (Chow, 2013). Despite of its variety, inspection is important to avoid injury. In United Kingdom, inspection on functional control of outdoor gym facilities is advised to carried out in every one (1) to three (3) months, with a set of pre-determined checklist to check for compartment's damages, lubricating moving parts, touching up paint, tightening loose bolts and nuts, and addressing any other maintenance needs (Sunshine Gym, 2024). Conversely, the frequency of inspection towards outdoor gym facilities in Malaysia is lower compared to the United Kingdom National Landscape Department (2010) set out that inspection is recommended to conduct every six (6) months apart or when needed. Apart from scheduled maintenance, routine maintenance is conducted in maintaining the facility. For instance, In the United Kingdom, the areas where this facility located should be kept free from litter and broken glass which requiring daily upkeep and during this daily cleaning, it is also recommended to conduct a visual check for any damages (Sunshine Gym, 2024).

#### **2.6.8 Maintenance Operation of Recreational Facilities (Bicycle rental & horse riding)**

The maintenance of bicycle subjected on how frequent the use. Frequent use of bicycle demands thorough regular maintenance. There are many parts of a bicycle which require a pre-determined checklist for inspection and subsequently maintenance (Malaysian Institute of Road Safety Research, 2022). Generally, bicycle requires a minimum of weekly, monthly

or yearly inspection. Malaysian Institute of Road Safety Research (2022) set out that wheel spoke, and wheel condition are required to be inspected meantime bicycle chain and gear are needed to be lubricated in weekly basis. Parts such as tyre tread, rim, wheel bearing, chain, gears, handlebar, pedal, seat height, light, and bell requires monthly inspection where bicycle body frame requires yearly inspection (Malaysian Institute of Road Safety Research, 2022). In addition, Malaysian Institute of Road Safety Research (2022) recommends a brief inspection of the chain, brakes, and air pressure before each ride. Public parks in Malaysia provides bicycle rack to place bicycle. According to National Landscape Department (2010), bicycle rack is advised to inspect in every three (3) months for its structure. In the event damages is found during inspection, maintenance operation needed to be undertaken.

Horse riding generally encapsulate the maintenance of the horse, its barn, and paddock, Fundamental care for horse includes farrier to take care of horse hooves in every six (6) weeks, anti-parasitic treatment in every three (3) months, and immunisation in every six (6) months (Harty, 2008). Barn enclosed by fence shall be inspected regularly for protruding nails for wooden fence and broken wire for wired fence to avoid injury occur to horses, where paddock is required to be dry and free of holes for consistent footing, hence routine dragging using tractor-drawn harrow is required (Harty, 2008). Additionally, the bedding in the horse stall should be cleaned daily to remove damp bedding containing horse excreta to avoid fly infestation (Harty, 2008).

### **2.6.9 Maintenance Operation of Outdoor Sport Facilities**

Based on previous section, football field, basketball court, volleyball court, tennis court and takraw court are often build outdoor in a park. Football field surfaces are commonly composed of natural turf, a combination of natural and synthetic turf, or entirely synthetic

turf (Fédération Internationale de Football Association, 2021). Even in Malaysia, a shift into using of artificial turf from natural turf is on the rise (Shafie et al., 2023). The maintenance of natural turf is more complicated compared to synthetic turf. For instance, in the west, maintenance of natural turf includes mowing subsequently clipping removal, fertilisation, overseeding, aeration, top dressing, and thatching (Cook, 2013).

In Malaysia, maintenance of natural turf included mowing, line marking, aeration, thatching, top dressing, and fertilising. According to Tan (2015), natural turf required two (2) to three (3) times mowing in a week, line marking after two (2) to three (3) games, aeration of turf in every two (2) to six (6) weeks, and thatching one (1) to three (3) times annually, top dress turf with sand two (2) to four (4) times yearly, where fertilising soil-based turf every four (4) to six (6) weeks and sand-based turf in two (2) times a month. Based on National Landscape Department (2010), football field requires daily cleaning of foreign object and inspection if necessary maintenance on its structure in every six (6) months.

Conversely, synthetic turf required brooming, spiking, and removal of paint and garbage. According to Jastifer et al. (2019), it is recommended to broom synthetic turf weekly if it is frequently used. Spiking the turf two (2) to three (3) times a year to allow the infill layer that protects player from injury penetrate deeper into the ground (Jastifer et al., 2019). Furthermore, the infill layer will wear down over time as the material adheres to players and gets displaced, hence, routine inspection is needed to timely replenish the thinning infill. Over time, colour of turf will fade and hence turf painting is required which will lead to paint build up, hence removal of paint is advised after four (4) consecutive paint application (Jastifer et al., 2019). In addition, it is essential to routine removal of foreign items such as garbage is also essential to ensure player's safety (Jastifer et al., 2019).

For outdoor basketball court and volleyball court, based on Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (2017), volleyball court surface can be made of turf, concrete, gravel or asphalt where basketball court can be made from concrete, gravel or asphalt. In Malaysia, the common flooring system used for basketball in Malaysia are concrete topped with acrylic coating (Excelsports, 2019b). Besides, acrylic coating on cement is also ideal outdoor flooring system for tennis, volleyball, and tennis (Excelsports, 2019a).

For court with only cement flooring, line marking, routine removal of foreign floor object and regular inspection for surface damages and invasive plant is advised (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2017). For acrylic coated surface, routine cleaning using soft brush and broom is advised (Excelsports, 2019a). In the United States, concrete sports ground involved daily, weekly, and monthly inspection depending on the fixtures available. For instance, in Brookhaven Parks and Recreation (2020), daily inspection involved examine on court's play surface cleanliness, weekly include fence inspection, monthly include inspection on court's gate. Whereas in Malaysia, National Landscape Department (2010) recommended inspection of the structure in every six (6) months and immediate maintenance taken when fixtures found damage.

#### **2.6.10 Maintenance Operation of Indoor Sport Facilities**

As mentioned in the previous section, in addition to badminton, futsal, and table tennis, sports facilities can also be provided indoors for other sports, such as basketball and volleyball. For In related to indoor badminton court, Badminton World Federation (BWF)'s 2018 as cited in (Asian Flooring India Private Limited, n.d.) set out that wooden, synthetic, rubber, and PVC

are examples of indoor badminton court flooring. For futsal court, artificial turf and acrylic court were ideal for indoor futsal court (Excelsports, 2019c). Despite on variety of flooring, generally, all courts surfaces require regular maintenance. For instance, sweeping to keep the court surface free of foreign object such as debris (Spinservesports, 2024). It is recommended to clean court surface on daily or weekly basis to ensure the safety of its user (Renner Sports Surfaces, 2020). For table tennis, the maintenance of it is relatively elementary. Cleaning of table playing surface and lubricate all moving parts of the table are the steps in maintaining a table tennis (Insportline, n.d.)

In addition, indoor courts contain its related fixture for instance badminton contain fixtures such as net, net post, and others (Badminton World Federation (BWF), 2018). All fixtures and flooring are subjected to inspection on signs of damages as this is imperative to ensure the safety of its player and smoothness of game (Spinservesports, 2024). In Malaysia, National Landscape Department (2010) set out that the inspection for courts such as futsal court is required to structural inspection in every six (6) months. In the event of damages found, repair or replacement of fixtures must be carried out.

#### **2.6.11 Maintenance Operation of Park Furniture (Gazebo, benches, and others)**

The maintenance operation of gazebo is found involve routine maintenance and schedule inspection. For instance, in the United States, Park District of Oak Park (2014) outlined that building structure and electric related fixtures of gazebo were inspected annually. Usually, the execution of maintenance towards building structure or fixtures often carried when the it is damaged (Maricopa County Parks and Recreation, n.d.; Park District of Oak Park, 2014). In Malaysia, the maintenance of gazebo advised to be cleaned daily and inspection shall be carried out in every three (3) months on the building structure and electrical components

(National Landscape Department, 2010). Generally, the maintenance operation of gazebo in Malaysia involved daily cleaning to ensure gazebo free from foreign object such as dust that obstruct the aesthetic of park and repainting of the structure or replacing or repair of worn out components if damage found (National Landscape Department, 2010).

According to Wheels for Wellbeing (2024), benches may made from material such as wood, plastic, metal, stone or concrete. Among these materials, wood benches had the most tedious maintenance operation. Wooden benches may made up from softwood or hardwood where hardwood benches need to be cleaned with a brush and soapy water once a year to remove invasive of threatening organism such as lichen (Royal Horticultural Society, 2025). Conversely for softwood, surface washing at least once a year subsequently apply a layer preserving paint on softwood surface is recommended lichen (Royal Horticultural Society, 2025). Wheels for Wellbeing (2024) added that areas of the benches where water can accumulate, such as joints, fixings, and points of contact with the ground, are most prone to rot. Thus, regular inspection and maintenance is essential to keep wooden bench in good condition.

For benches made from plastic, metal, stone or concrete, the maintenance operation is minimal compared to wooden bench. For instance, plastic bench subject to inspection for possible damages over time (Wheels for Wellbeing, 2024) and regular cleaning of removing dirt from the plastic surface (Royal Horticultural Society, 2025). For metal bench, similar to plastic where regular cleaning to remove surface dirt is required, in addition, metal surfaces also need to be coated with rust-preventing paint (Royal Horticultural Society, 2025; Wheels for Wellbeing, 2024). For concrete or stone seating, only regular cleaning of stone or concrete surface is required (Furnitubes, 2016). In Malaysia, National Landscape Department (2010)

set out that bench provided in public park is required to be clean on daily basis where inspection on the structure of bench is required to be carried out in every three (3) months and in the event damage found, immediate repair and replacement is mandatory.

#### **2.6.12 Maintenance Operation of Picnic and Camping Area**

Based on previous section, picnic area may contain barbeque facility and picnic table where camping area are often equipped with facilities such as drinking water, toilet, rubbish bin, lighting, and others. In the west, picnic area generally requires routine maintenance such as alternate day to clean the park furniture provided such as tables, benches, barbecue pits, and others (Texas Department of Transportation, n.d). Cleaning include but not limited to dirt, graffiti, spider webs, litter on the surrounding paths, and removing trash in the rubbish bin (Texas Department of Transportation, n.d). In Malaysia, barbeque area and camp area require attention on the cleanliness of structure thus routine daily cleaning is advised by the National Landscape Department (2010). Inspection and maintenance of the facility structure set out to be carried out in every three (3) months for barbeque area and six (6) months for camping area, if damage is found, repair or replacement of damage part required to be executed (National Landscape Department, 2010).

#### **2.6.13 Maintenance Operation of Washroom**

Nur Izzati Syahirah Mohd et al. (2023) asserted that environment condition such as lighting, structural maintenance and cleanliness of floor, basin, urinal bowl, door, faucet and others, and hygiene facilities such as toilet tissue, liquid soap, trash can, and others are example of toilet facilities required maintenance operation. Toilet maintenance is divided into routine and scheduled cleaning. Generally, toilets require routine cleaning at least once a day or more

frequently depending on the volume of use (Restroom Association Singapore, 2022). Scheduled cleaning of structural facilities, such as door, faucet, trash can and others shall be done weekly, bi-weekly or monthly basis (Restroom Association Singapore, 2022). In Malaysia, the maintenance of washroom is divided into two categories: structural maintenance and mechanical and electrical maintenance. Structural maintenance involved routine daily cleaning of washroom, inspection of the building in every six (6) months on possible damage, conversely, for mechanical and electrical maintenance, inspection is conducted once a year and immediate maintenance shall be executed when need arise (National Landscape Department, 2010).

#### **2.6.14 Maintenance Operation of Prayer Room**

To support Muslim prayer, essential facilities such as water for ablution, lighting (Mannan, 2021), prayer carpets (Ahmadiyya Muslim Community, 2025), and others play a key role in facilitating the prayer experience. In Malaysia, the maintenance of prayer rooms is identical to washroom which are divided into two categories: structural maintenance and mechanical and electrical maintenance (National Landscape Department, 2010). Structural maintenance involved routine daily cleaning of prayer room and inspection on the structure in every six (6) months for possible damage, conversely, for mechanical and electrical maintenance, inspection is conducted once a year and immediate maintenance shall be executed when need arise. In addition, water is essential for ablution, thus, this facility is advised to be inspected in every six (6) months or in the event damages found at any occurrence, repair or replacement needed to be conducted immediately (National Landscape Department, 2010).



#### **2.6.15 Maintenance Operation of Signage (map, directional, information & education sign and others.)**

Timber, recycled plastic, and metal are common materials used for signage (Path for All, 2009). Generally, timber and metal require maintenance, while recycled plastic is virtually maintenance-free (Path for All, 2009). Regardless of the material used for the signage, regular inspection and maintenance are crucial to prevent high maintenance costs. According to Path for All (2009), frequency of inspection can be conducted weekly, bi-weekly, monthly, every two months, or annually. Parks Canada (2007) set out that signage is required to be inspected biannually to ensure signages are clear from human destruction such as vandalism or natural blockage such as overgrown tree. In Malaysia, similar to parks in Canada, signage inspection is carried out in every six (6) months, in addition, routine daily cleaning is advised to ensure signage free from blockage of litter (National Landscape Department, 2010).

#### **2.6.16 Maintenance Operation of Park Lighting**

Parks nowadays are best installed with Light Emitting Diode (LED) light (City of London, 2018) which greatly reduce the maintenance cost compared to traditional lighting. Lighting components include bulb, pole, and electrical system (Productive Parks, 2025). The maintenance of lighting located outdoor are similar to other features and facilities in parks which requires inspection. Outdoor lighting requires at least annual or seasonal inspection on the lighting alignments, pole condition, and cable system (Productive Parks, 2025). Besides, lighting fixture such as its lens cap require at least annual cleaning to remove accumulated insects which can obstruct the emission of light onto the intended area (Productive Parks, 2025). In Malaysia, park lighting maintenance operation divided into two components which are structure and mechanical and electrical. Cleaning of structure is advised to conduct daily

and inspection on the structure and mechanical and electrical components are advised to conduct in every three (3) months for possible damages and maintenance if required (National Landscape Department, 2010).

#### **2.6.17 Maintenance Operation of Rubbish Bin**

In the United States, Town of Rowley (2020) outlined that trash collected in rubbish bin is collected on weekly basis. In Malaysia, National Landscape Department (2010) advised that trash in the rubbish bin required to be routinely cleaned. Trash may include, but is not limited to, papers, plastics, leaves, stones, cigarette butts, and any other foreign materials that do not belong in the park (Martinez, 2022). Park goer that picnic or barbeque in the park may create food waste. Food is biodegradable waste which led to production of foul smell and liquid during the breakdown process (Yarra Ranges Council, 2025). Sometimes plastic bag used for trash has ripped or torn along a seam, causing its contents to spill out in the bins. Thus, rubbish bin is advised to clean at least once a month to ensure the bins free from unfavourable odour (Yarra Ranges Council, 2025). Furthermore, it is also necessary to conduct periodic inspection on the structure of rubbish bin to ensure there is no leak or spills from the rubbish bins to the ground (Town of Rowley, 2020). In Malaysia, structure of rubbish bins is advised to be cleaned daily and inspected in every three (3) months for dull or crack, and replaced accordingly when damage found (National Landscape Department, 2010).

#### **2.6.18 Maintenance Operation of Drinking Fountain**

Generally, maintenance of drinking fountain requires regular cleaning of the fountain structure. One Less Bottle (2019) outlined for the safety of user, it is advised to clean daily (One Less Bottle, 2019). However, in United States, Roanoke Parks and Recreation (n.d.)

outlined that drinking fountain is cleaned once a week during high-use period or when needed. The structure of drinking fountain requires regular polish to avoid the fountain looking dull (Urban Fountains and Furniture, 2018). Besides in high debris area where sand or leaf may capture in the basin, regular check remove debris instantly is advised to avoid blockage of basin (Urban Fountains and Furniture, 2018). Schedule maintenance shall include on the changes of filter based on manufacture maintenance schedule (Pacific Institute, 2025). In addition, One Less Bottle (2019) advised that scheduled maintenance or inspection shall be carried out every six (6) months (One Less Bottle, 2019). However, it is found that in Australia, inspections conducted every three (3) months to ensure that the fountain's internal connections, water flow, as well as all external access screws and fixing bolts are secure (Urban Fountains and Furniture, 2018).

#### **2.6.19 Maintenance Operation of Kiosk/Vending Machine**

As kiosk in a park is a small free-standing building (Taib & Tazilan, 2017), in Malaysia, maintenance of kiosk requires routine daily cleaning in and around the premises. In addition, maintenance of kiosk also concerns on the structural aspect and the maintenance of mechanical and electrical aspect. According to National Landscape Department (2010), for structural aspect, inspection and maintenance on the building structure for crack, leakage, moss and others is required to be conducted in every six (6) months, for mechanical and electrical aspect, immediate replacement of broken electrical items such as electric cable or lighting is advised. Furthermore, testing of the electrical cable is required to be conducted once a year to ensure the cable is functioning properly (National Landscape Department, 2010).

Maintenance of vending machine subject to the type of vending machine. Vending machine could differ into beverage or snack machine. Both internal and external compartment of beverages and snack machine are advised to be wipe down daily (Vending Sense, 2023). For beverages machine, more attention is required to maintain the machine. This include cleaning of drip tray, liquid conducting pipe, and a thorough weekly cleaning of entire machine is also advised to ensure the machine in good order (Vending Sense, 2023). Generally, the maintenance of beverages vending machine is more complicated compared to snack machine.

## **2.7 Park Features and Facilities Maintenance Dimensions**

Evaluation of park management from the perspective of user regularly studied using user satisfaction (Hawthorn et al., 2000; Herrick & McDonald, 1992; Ismail et al., 2017). Hawthorn et al. (2000); Manning (1999) assured that user satisfaction able to pin point on management weakness and urged formation of sound park management strategy. To measure satisfaction of features and facilities, it is crucial to identify the indicators as Floyd (1997) mentioned that indicators contribute to user recreation quality and experience whilst provide essential data related to physical, social and managerial condition of a recreational settings to park manager, thereafter, to assist authority making sound decision, identification of manageable predictors is crucial (Fletcher & Fletcher, 2003). Manageable predictor are predictors that could be managed by a park manager where unmanageable predictor is predictor that may affected user satisfaction but it is out of the control of park manager for instance, weather condition (Fletcher & Fletcher, 2003).

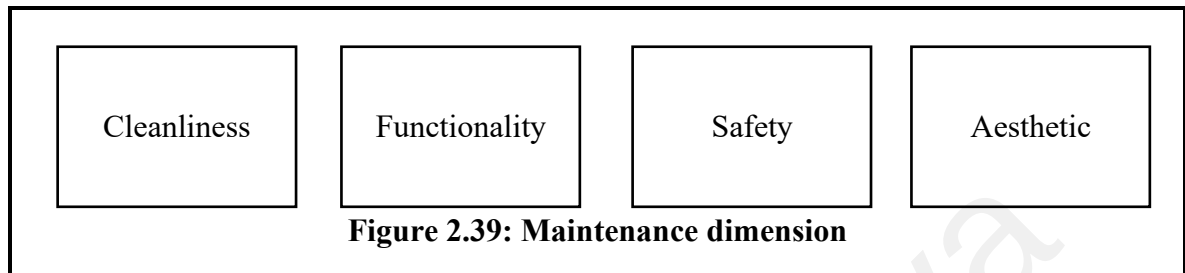
Fletcher and Fletcher (2003) identified cleanliness and condition are proven dimension that affect park user satisfaction. Vernon et al. (2004) in an evaluation of recreation facilities

found that condition, maintenance and safety are standards evaluation of recreation facilities quality. Condition is study on the existing condition in terms of accessibility, provision, functionality and cleanliness of facilities; Maintenance concern in cleanliness and aesthetic; and safety concern in hazards in the park (Vernon et al., 2004). Partly similar to Malaysia, a good park depended on condition of facility, measured in good or bad (Sakip et al., 2015). Good or bad condition may relate to functionality of the feature as Brian et al. (2006) defined that condition is the state or functionality a feature.

Lindgren (2010) found that general cleaning, and maintenance of soft and hard scape are relatable to dimension such as safety, cleanliness, and functionality which contributed to image of well-kept park. Similar to Malaysia, Nor'Aini (2017) mentioned that maintenance of features, neither natural or manmade require to ensure cleanliness, safety, and functionality of the park. Similarly, Abbasi et al. (2016); Yu et al. (2018) also identified that cleanliness, facility maintenance, and safety affected the satisfaction of park user and Ranjha (2018) in a study of maintenance neighbourhood park indicated that cleanliness, safety, functionality, aesthetic, and upkeep of vegetation are indicators to maintenance quality of a park.

For the case in Malaysia, since maintenance is a form service, Abdullah et al. (2019) cited from KLCH that the local authorities uses cleanliness, softscape maintenance, hardscape maintenance, parking space and safety as maintenance aspects to measure user satisfaction. Despite there is some inconsistency used of dimensions to measure maintenance quality, nevertheless, cleanliness, functionality and safety are commonly repeated. Aesthetic is included as maintenance dimension for the reason it found affects the public perception and park quality (Dinda & Ghosh, 2021; Ter, 2011; Zhu et al., 2020). As a result, feature

maintenance often contributed to cleanliness, functionality, safety and aesthetic of park as depicted in Figure 2.39.



### 2.7.1 Cleanliness

Hamilton et al. (2017); Liu and Xiao (2020) define that cleanliness is the overall aesthetic and maintenance of an area. Demir et al. (2010); Fletcher and Fletcher (2003); Gürer and Uğurlar (2017); Nam and Kim (2019); Yücel and Mimarı (2007) asserted that filthiness of park critically affects park user satisfaction. Generally, all areas within the park required to be at dirt free at any given times. Littering is a common issue for many green open spaces (Abdul Aziz et al., 2019; Nam & Kim, 2019; Rangoni & Jager, 2017) and it has been a concern that interfere the perceived visitor pleasantness. Cans, bottles, food wrapper and others. were examples of possible litter found within the park and often ruin the park, creating foul smell and affect the cleanliness of a park (Abdul Aziz et al., 2019). Damaged rubbish bin also contributed to the park filthiness, in order to secure the cleanliness of a park, Mursadin (2020) suggested damaged rubbish bin to be replaced accordingly and increase frequency of garbage collection.

In regards to features related to cleanliness dimension, Fletcher and Fletcher (2003) found that cleanliness of water features and restroom is essential to park visitor satisfaction. Water features is required to be free from trash for water related activities such as swimming or

fishing (Fletcher & Fletcher, 2003). Yücel and Mimarı (2007) stressed that the maintenance of cleanliness via litter control is important to keep the park clean. Maulan (2002) mentioned that littering is a problem leading to recognisable dissatisfaction of park user specifically the lake in Seremban Urban Malaysia due its filthiness and foul smell. The recent scenario, Mansor et al. (2019) found that irregular maintenance related to water bodies and litter has affected park user in several Kuala Lumpur parks.

Cleanliness of restroom often related its odour and floor cleanliness. Association of Southeast Asian Nations (ASEAN) (2016) outlined that toilet need to free from bad odour, floor and toilet bowl need to be free from dirt. United States (Fletcher & Fletcher, 2003; Graefe et al., 2000), Malaysia (Sapari et al., 2013), Pakistan (Javed et al., 2015), Indonesia Priadaniswari (2017), Sri Lanka (Arachchi et al., 2017), Turkey (Muderrisoglu et al., 2010), Australia (Tonge et al., 2011) are countries that researched on satisfaction by questioning the general cleanliness of park. In addition, there were also instances where maintenance triggered a second dimension. For instances, cleanliness of restroom that cue safety dimension due to level of hygiene that poses threat to human health and safety (Nur Izzati Syahirah Mohd et al., 2023).

Apart from dirt-free restroom, cleanliness of picnic facilities (Tonge et al., 2011), barbecue facilities (Tonge et al., 2011), trash bin (Priadaniswari, 2017), and trail (Verlič et al., 2015) were found connected to user satisfaction. Mohandespor and Caymaz (2019) advocated that maintenance of facilities is obligatory to ensure clean facilities is provided for user enjoyment.

### 2.7.2 Functionality

Dempsey et al. (2014); Nor'Aini (2017) mentioned that functionality of equipment is essential in maintenance dimension. According to Cambridge Dictionary (2021), standard of being useful, practical, and appropriate for the reason for which anything was created is referred to as functionality. Goodwin (1987) mentioned that usability equivalent to functionality where it both involved user utilisation. Functional park feature often refer to its facilities such as outdoor furniture (Bahriny & Bell, 2020) and restroom, drinking fountains, ball courts, light pole, benches, pathways, playground equipment, fitness facility, sport field, picnic table and grills are example of facility where its usability may affect satisfaction of user (Dempsey et al., 2014; Fletcher & Fletcher, 2003; Kulczyk et al., 2018; Liu & Xiao, 2020; Vernon et al., 2004).

According to Radzi et al. (2013), functionality is least valued dimension in Malaysia park study. Despite however, functionality of park feature is still essential. For instance, Mohamad Isham et al. (2022) asserts that the functionality of restroom is one of the most important aspects of toilet maintenance that affected user perception in restroom provided in Malaysian rail station. Facilities required by the user during use include functioning ventilation, flush, lighting, and a working latch for the door (Mohamad Isham et al., 2022). Maintenance plays an integral role in maintaining restroom functionality in Duijster et al. (2022)'s study.

Besides restroom, it is essential that the playground is functional while children attended to the facility. Similar to restroom where its maintenance cued cleanliness and safety dimension, the functionality of playground also linked to safety. Çay (2017) stressed that maintenance of playground equipment and its surface is crucial to safety of children. Protruding bolts, nails, screws, or fixtures on playground equipment and surface fill are state that affect the



functionality and safety of playground (Vernon et al., 2004). However, playground satisfaction was currently studied from the aspect of provision and design (Moore et al., 2020; Özen Turan et al., 2016; Stanton-Chapman & Schmidt, 2017; Yao, 2015).

In Malaysia, satisfaction of playground was accessed in terms of comfortability (Ismail et al., 2017). Comfort encompass safety (Yücel, 2006) and cleanliness (Karuppannan & Sivam, 2013). Playground despite being a spontaneous recreation facility in park (World Urban Parks, 2016), it is however, unsafe due to poor maintenance leading to distressing injuries cases. In addition, safety of playground in related to maintenance study is limited in the realm of research (Saaïd, 2016). Recent report pointed more than 70 percent of playground in Malaysia are non-functioning hazardous partly due to maintenance deprivation (Yuen, 2018). Therefore, maintenance operation is imperative to ensure functionality of features and facilities.

### **2.7.3 Safety**

Kurzi and Schroth (2018); Vernon et al. (2004) confirmed that there is a correlation between perceived safety and maintenance of a park and both studies agree that park safety relies on the level of maintenance. Research further expressed that the maintenance of landscape such as soft scape (Doğrusoy & Zengel, 2017; Mohamed & Othman, 2012) and hard landscape features (Kurzi & Schroth, 2018) are found contributed to user perceived safety. Example of landscape features where its maintenance affected user safety include lawn (Kuo et al., 1998), tree, shrubs, pathway, toilet, exercise facilities, gazebo, lighting, and playground equipment (Malek & Mariapan, 2009; Mohamed & Othman, 2012). In addition, Yücel (2006) also found that maintenance of park furniture affects perceived user safety.

In terms of plant, studies has found that the condition and maintenance of vegetation is crucial to user satisfaction (Atsari et al., 2018; Özen Turan et al., 2016). Abdul Malek and Nashar (2018) stressed that the tree maintenance certainly affected perceived safety from its visitor. International Society of Arboriculture (ISA) (2011) pointed that fracture of weak and unhealthy tress may directly fell and wounded people. Sreetheran (2010) found that hazardous tree is perceived threaten the safety of the user in urban park. Regrettably, Rohayu et al. (2018) pointed that in Malaysia, there is no guideline related to tree inspection despite it there has been issue on overly grown tree increase darkness of an area by obscuring brightness of light. Other than unhealthy trees, Bjerke et al. (2006) pointed out that plant density is one of the numbers of environmental characteristics highly likely to contribute to the perceived appropriateness of parks for outdoor recreation.

Apart from tree, ground cover such as lawn and shrubs are examples of vegetation were found require maintenance to ensure security. Thick untrimmed lawn and shrubs gave negative visual quality and unsafe feeling to the user which subsequently affect the users' satisfaction (Mohamed & Othman, 2012; Sreetheran, 2010). Özen Turan et al. (2016) and Ignatieva et al. (2017) enhanced that plant that lacking on maintenance led to overgrown grass reduce permeability and legibility of the park which encourage criminal activity and creates safety issue that affect satisfaction of park user in Turkey and Sweden respectively. Generally, the maintenance of tree and shrubs contributed to park user liking and satisfaction while visit the park (Jaafar & Tudin, 2010; Malek & Mariapan, 2009).

In terms of facilities, maintenance of playground played an important role in public preferences as Centers for Disease Control (CDC) (1988); Sallis et al. (1997) specified parents often concern on the safety of the playground prior allowing their children to play.

Playground needed to be maintained to ensure its safety (Martin & Cooper, 2005). Allen et al. (2013) stated that playground safety were generally accessed in by four main categories: age-appropriate designed, fall surfacing (Cradock et al., 2005), maintenance (Cradock et al., 2005), and its physical environment. A badly maintain playground found deter parents' decision allowing their children to visit due to perceived hazard which could harm their offspring and the prohibition blocked children access to playground thus lowered the children's physical activity (Cradock et al., 2005).

Association of Southeast Asian Nations (ASEAN) (2016) pointed that toilet need to be safe by ensuring sufficient lighting and free from signs of crack and defects. Lighting is another feature that essential for user perceived safety (Malek & Mariapan, 2009). In Turkey (Özen Turan et al., 2016) and Mexico (Ayala-Azcárraga et al., 2019), researchers emphasised that lighting contributed to great sense of safety. Poor lighting lured crime occurrence (Ayala-Azcárraga et al., 2019). Similar to the Malaysian context, Malek et al. (2018); Rosli et al. (2020) discover that park lighting is essential contribute to safety of the park and its user satisfaction particularly during night time. van Rijswijk and Haans (2017) confirmed that presence of lighting correlated to perceived safety and outline that perceived safety implies illumination help enhance vision openness, prevent ambush attack, facilitate escape during emergency especially when night falls. Besides, impaired pavement (Kurzi & Schroth, 2018) or cracks of pathway (Sreetheran, 2010) also found affected the perceived safety of park user.

Apart from the maintenance facilities, in the 80s, Schroeder and Anderson (1984); Shaffer and Anderson (1985) found that human discourtesy such as litter and graffiti in park affect user perceived safety. Recent findings by Kurzi and Schroth (2018) also identified littering and graffiti affected the perceived safety of park user. Litter such as broken glass litter poses

potential harm to user for instance Arafat et al. (2007) found that Palestinian children were harmed by shattered glass. In terms of graffiti, Maruthaveeran and van den Bosh (2015) found that subjected to individual, graffiti may create fear to the park goer. Mansor et al. (2019) expressed that a clean park prevents litter issue and provide a sense of secure to the user. Therefore, park required to be maintained free from litter and graffiti at all times to ensure prevention of harm and psychological dissonance.

#### **2.7.4 Aesthetic**

Graefe et al. (2000) discovered that a park appearance is significant to satisfaction of user. Radzi et al. (2013) defined from the aspect of green space, aesthetic signified provision of soothing visual enjoyment from blending of natural and cultural features. Gatalaska and Oleksiichenko (2019); Levy (2009); Malek et al. (2011); Yusufzyanova (2020) confirmed that that aesthetic is one of the significant factor and contribute to user perception, preference and satisfaction. Ezennia et al. (2017) mentioned likewise, aesthetic is a behold principle as early as during the design stage, it is also expanded to the maintenance stage when park is in used. Previously, Kaplan (1983); Ulrich (1981); Zhao et al. (2017) mentioned that plants and water are recognisable feature in green open space that affect the user perceived beauty.

However, visit perception today do not contain solely to presence of natural features, but also cultural features. Liu and Xiao (2020); Priadaniswari (2017) outlined that common feature contribute to aesthetic of park satisfaction involve presence of plant and facilities such as hills, water fountains, flowers, fields, lawn, trails, kiosk, seat, and gazebo. To ensure continuation of features' attractiveness, maintenance is necessary to safeguard the park's appearance as Abdelhamid and Elfakharany (2020); Burns et al. (2003); Liu and Xiao (2020); Yu et al. (2018) stressed that all park features regardless of its nature require ongoing

maintenance to for assurance in user satisfaction. Cared facilities ensure visual aesthetic and comfortability to the user (MacKay & Crompton, 1990).

Talal and Santelmann (2020); Vernon et al. (2004); Yücel and Mimari (2007) pointed that removal of invasive plant, fertilising, irrigating, mowing of grass, pruning of tree, pruning of bushes are significant plant maintenance in safeguarding pleasantness of park. In addition, Abdul Aziz et al. (2019); Gibson (2016) claimed that removal of litter also connected to aesthetic of park. A clean park contributed to aesthetic factor and thus satisfying visitor visual comfort (Maniruzzaman et al., 2021). Apart from that, Liu and Xiao (2020) added that diversification of planted plants also contributed to park beauty as well as user satisfaction. Similarly, in Malaysia, Mohamed and Othman (2012) found that maintenance of groundcovers or shrubs supplies to the user satisfaction. However, current softscape study mainly concerned on the design (Özen Turan et al., 2016) and provision (Fletcher & Fletcher, 2003). In Malaysia, Hussein (2014b) mentioned that poor landscape maintenance that include man-made landscape affects the park aesthetic. Mohamad Muslim et al. (2018) mentioned that condition of feature such as playgrounds and sitting areas are example of culture features contribute to aesthetic quality that in turn affect the visitor perception.

#### **2.7.5 Summary of Maintenance Dimension of Identified Public Park Features and Facilities**

Based on thorough study on the park maintenance from the user perspective, four (4) dimensions which are cleanliness, functionality, safety, and aesthetic were found. Each of which is distinctly related to the nineteen (19) identified features and facilities is summarised in the following Table 2.4:

**Table 2.4: Summary of maintenance dimension of public park features and facilities**

| No. | Features and Facilities                               | Identified Maintenance Dimension<br>from Literature Review |               |        |           |
|-----|-------------------------------------------------------|------------------------------------------------------------|---------------|--------|-----------|
|     |                                                       | Cleanliness                                                | Functionality | Safety | Aesthetic |
| (a) | Natural Landscape                                     | ✓                                                          |               |        | ✓         |
| (b) | Designed Landscape – Softscape                        |                                                            |               | ✓      | ✓         |
| (c) | Designed Landscape – Hardscape                        |                                                            |               | ✓      |           |
| (d) | Children Playground                                   |                                                            | ✓             | ✓      | ✓         |
| (e) | Water Activity Facility                               |                                                            |               |        |           |
| (f) | Track or path                                         | ✓                                                          |               | ✓      | ✓         |
| (g) | Outdoor Gym Facilities                                |                                                            | ✓             | ✓      |           |
| (h) | Recreational facilities<br>(Bicycle & Horse Riding)   |                                                            |               |        |           |
| (i) | Outdoor Sports Facilities                             |                                                            | ✓             |        |           |
| (j) | Indoor Sports Facilities                              |                                                            | ✓             |        |           |
| (k) | Park furniture (Gazebo,<br>Benches and others.)       |                                                            | ✓             | ✓      | ✓         |
| (l) | Picnic and camping area                               | ✓                                                          | ✓             |        |           |
| (m) | Washroom                                              | ✓                                                          | ✓             | ✓      |           |
| (n) | Prayer Room                                           |                                                            |               |        |           |
| (o) | Signage (map, directional,<br>information, education) |                                                            |               |        |           |
| (p) | Park lighting                                         |                                                            | ✓             | ✓      |           |
| (q) | Rubbish bin                                           | ✓                                                          |               |        |           |
| (r) | Drinking fountain                                     |                                                            | ✓             |        |           |
| (s) | Kiosk/Vending Machine                                 |                                                            |               |        | ✓         |

## 2.8 Development of Park Performance Measurement

In the realm of recreational field, recreation performance measurement is fully or partly adopted Service Quality Model (SERVQUAL) develop by Parasuraman et al. (1985); Parasuraman et al. (1988). SERVQUAL model is a paradigm that gauge consumer satisfaction containing twenty-two (22) variables factored under five main dimensions which are Tangibles, Reliability, Responsiveness, Assurance, and Empathy (Parasuraman et al., 1988). MacKay and Crompton (1990) and Hamilton and Crompton (1991) adopted SERVQUAL in accessing the quality of recreation program and quality of state park in

Canada and United State respectively. There were also studies adopted SERVQUAL and delivered tailored quality model dedicated to the local context. For instance, in Australia Howat et al. (1996) accessed quality on recreational centres and delivered Centre for Environmental and Recreation Management Customer Service Quality (CERM CSQ), and in Malaysia Jaafar and Tudin (2010) accessed on quality of urban park and delivered UPARQUAL.

Nair (2016) has confirmed that quality of service able to measure the performance of an industry. Hence, this makes it possible that performance can be measured through customer satisfaction. In addition, Hamilton and Crompton (1991) asserted that in the recreation context, performance is closely intertwined with satisfaction. Even studies in recent years such as Jung and Hong (2008); Nair (2016) demonstrated that examining the satisfaction of each variable within a specific area of study is an effective method for evaluating performance. Therefore, it can be concluded that performance can be assessed by evaluating the satisfaction of each identified variable.

However, Parasuraman et al. (1988) pointed that variables that perceived satisfied by user may not actually affect the overall performance, hence the perceived overall quality is taken into measure to authenticate the variables. Similar in the recreational field, Hamilton and Crompton (1991) methodologically argued that in recreational context, satisfaction is related to gratification towards a specific experience where this specific gratification may not directly signify the summation of experience. Feng and Zhao (2022); Rey Gozalo et al. (2018); Saeedi and Dabbagh (2021); Yaqi and Rong (2022); Zhou et al. (2019) were among the park satisfactory studies that had considered overall satisfaction. Out of selected park features, Rey Gozalo et al. (2018) proved that in Spain, park environment such as air quality

and noise were features that affected the overall satisfaction. Similarly, Zhou et al. (2019) in the Chinese context discover despite there is specific high satisfaction towards individual park features provided, however, the overall satisfaction is found to be low. Saeedi and Dabbagh (2021) emphasised in the studies on effect of hardscape colour on satisfaction in public park in Iran mentioned that overall satisfaction should be considered to validate whether specific variables influence satisfaction. Therefore, it is informed that the overall satisfaction is crucial in identifying the actual features or facilities that affected user satisfaction.

Apart from overall satisfaction, Hamilton and Crompton (1991) pointed out that revisit is also one of the measures of recreational performance. Robert and Roger (1993) asserted that revisit intention is widely accepted as behavioural reaction when user is satisfied towards a transaction. According to Baker and Crompton (2000); Chien (2017), revisit intention consists of two components which are willingness to revisit and recommendation to others. In some case, researcher such as Oliver (1997) referred intention to revisit and intention to recommend as behavioural intention. Chien (2017) explained that revisit intention is also broadly refer as willingness to revisit. When user is satisfied towards their experience in overall transaction, they are willing to make return visit or engaged in positive word-of-mouth (Chien, 2017). Earlier, Howat et al. (1996) in the context of Australian recreation centre had already discover that satisfied customer will reflect in returning visit whereby a dissatisfied customer is likely to engage in negative word of mouth.

In addition, the study on willingness of revisit were found elucidate with restorative quality (Shafira Ranandya Herawan et al., 2022), place attachment (Çevik, 2020; Plunkett et al., 2019), and from multi-dimension (Ma & Jiang, 2020). According to Pasini et al. (2014),



sense of being away, fascination, extent, compatibility were four aspects that restorative quality of environment. In Shafira Ranandya Herawan et al. (2022) study, it is found that the compatibility that encompass congruent of park features, facilities, garden arrangement with user expectation were factor that affect revisit intention. Correspondingly, park facilities were also found significant from a multi-dimension and some place attachment studies. For instance, in Ma and Jiang (2020) multi-faceted research encompass ecology, service facilities, culture, and landscape against re-visitation found that service facilities such as activity platform for the people were attribute that influence behavioural intention such as return visit. Generally, activity platform may refer to facilities that acted as a platform for park user to conduct desired activity.

In terms of place attachment and willingness to revisit, Neuvonen et al. (2010) pointed out that place dependence, place identity, social bond, past behaviour, and service quality were aspect of place attachment that may contribute to revisit intention. Among these aspects, it is detected that place dependence is largely related to this research as Williams and Vaske (2003) defined that place dependence refer to condition which denote to the physical object that facilitate individual needs in carry out recreation activities. Physical object that support recreation activities may include track, outdoor gym facilities, benches and others. Neuvonen et al. (2010) mentioned that improved provision of activity opportunities may affect revisit intention. Similarly, Çevik (2020); Plunkett et al. (2019) also recommended that facilities that accommodate various recreational interest catalyses the formation of user attachment to the park and hence induced return visit. Despite user satisfaction is closely intertwined with willingness to revisit, in Zhan et al. (2021) study, it is found that park features such as noise, not significant to re-visitation, conversely, park facilities are one of the factor hinder return visit in the Chinese context.

Based on the confirmation and recommendation of past research, it is detected that overall satisfaction is an impeccable measure of park performance. In addition, it is also detected that park features and facilities also play an important role in willingness to revisit. Therefore, overall satisfaction and willingness of revisit are taken as measure of performance in this study.

## 2.9 Present Public Park Perception Studies in Malaysia

Table 2.5 indicate the location of present park perception study in Malaysia. It is detected that the present research on public park perception covered states such as Johor, Pahang, Penang, Perak, Putrajaya, Sabah, and Selangor and Federal Territory Kuala Lumpur.

**Table 2.5: Location of present public park perception study**

| States or Federal Territories  | Sub-area     | Local authority                  | Park name                    | Citation                                                            |
|--------------------------------|--------------|----------------------------------|------------------------------|---------------------------------------------------------------------|
| Federal Territory Kuala Lumpur | Kuala Lumpur | Kuala Lumpur City Council (KLCC) | Metropolitan Kepong Park     | (Sakip et al., 2015) ; (Azenan et al., 2021) ; (Abdul Ghafar, 2016) |
|                                |              |                                  | Lake Garden Titiwangsa       | (Sakip et al., 2015) ; (Azenan et al., 2021)                        |
|                                |              |                                  | KLCC Park                    | (Sakip et al., 2015) ; (Ali & Nawawi, 2006) ; (Azenan et al., 2021) |
|                                |              |                                  | Taman Desa Park City         | (Malek et al., 2018)                                                |
|                                |              |                                  | Menjalara Lake Park          | (Malek et al., 2018)                                                |
|                                |              |                                  | Taman Tun Dr Ismail          | (Ishak et al., 2022)                                                |
|                                |              |                                  | Taman Tasik Ampang Hilir     | (Malek et al., 2018)                                                |
|                                |              |                                  | Taman Desa Recreational Park | (Malek et al., 2018)                                                |

Table 2.5, continued

| States or Federal Territories | Sub-area       | Local authority                     | Park name                         | Citation                                         |
|-------------------------------|----------------|-------------------------------------|-----------------------------------|--------------------------------------------------|
| Johor                         | Johor          | Johor Bahru City Council (JBCC)     | Johor Bahru Urban Recreation Park | (Ismail et al., 2017)                            |
| Pahang                        | Kuantan        | Kuantan City Council (KCC)          | Gelora Park                       | (Mohamad Muslim et al., 2018)                    |
|                               | Termerloh      | Termerloh Municipal Council (TMC)   | Taman Bandar Termerloh            | (Ling et al., 2021)                              |
|                               |                |                                     | Taman Awam Kubang Gajah           | (Ling et al., 2021)                              |
| Penang                        | Penang         | Penang Island City Council (PICC)   | Penang Municipal Park             | (Mohamad Muslim et al., 2018)                    |
| Perak                         | Taiping, Perak | Taiping Municipal Council (TMC)     | Taiping Lake Garden               | (Mohamad Muslim et al., 2018)                    |
| Putrajaya                     | n/a            | Perbadanan Putrajaya (PPJ)          | Putrajaya Lake                    | (Danjaji et al., 2018)                           |
|                               |                |                                     | Taman Putra Perdana               | (Danjaji et al., 2018) ; (Nor'Aini, 2017)        |
|                               |                |                                     | Taman Pancarona                   | (Nor'Aini, 2017)                                 |
| Sabah                         | Kota Kinabalu  | Kota Kinabalu City Hall (KKCH)      | Taman Ujana Rimba Tropika         | (Che Rose & Basri, 2019)                         |
| Selangor                      | Petaling Jaya  | Petaling Jaya City Council (PJCC)   | Taman Rimba Riang                 | (Malek et al., 2018)                             |
|                               |                |                                     | Taman Aman                        | (Malek et al., 2018) ; (Anuar & Muhamadan, 2018) |
|                               |                |                                     | Taman Jaya                        | (Malek et al., 2018) ; (Anuar & Muhamadan, 2018) |
|                               |                |                                     | Central Park Bandar Utama         | (Malek et al., 2018)                             |
|                               |                |                                     | Ara Damansara Park                | (Malek et al., 2018)                             |
|                               | Selayang       | Selayang Municipality Council (SMC) | Taman Tasik Seri Gombak           | (Malek et al., 2018)                             |

Table 2.5, continued

| States or Federal Territories | Sub-area    | Local authority                 | Park name                       | Citation                                         |
|-------------------------------|-------------|---------------------------------|---------------------------------|--------------------------------------------------|
| Selangor                      | Shah Alam   | Shah Alam City Council (SACC)   | Shah Alam Lake Garden           | (Sakip et al., 2015) ; (Azenan et al., 2021)     |
|                               |             |                                 | Taman Rekreasi Tasik Seksyen 7  | (Malek et al., 2018) ; (Anuar & Muhamadan, 2018) |
|                               |             |                                 | Westru Park                     | (Malek et al., 2018)                             |
|                               |             |                                 | Taman Rekreasi Indah            | (Malek et al., 2018)                             |
|                               |             |                                 | Section 10 Public Park          | (Anuar & Muhamadan, 2018)                        |
|                               |             |                                 | Shah Alam Lake Garden           | (Mohamad Muslim et al., 2018)                    |
|                               | Subang Jaya | Subang Jaya City Council (SJCC) | Subang Lake Park                | (Ali & Nawawi, 2006)                             |
|                               |             |                                 | Taman Wawasan Recreational Park | (Malek et al., 2018)                             |
|                               |             |                                 | Subang Ria Recreational Park    | (Malek et al., 2018)                             |
|                               | Serdang     |                                 | Sri Serdang Park                | (Anuar & Muhamadan, 2018)                        |

## 2.10 Chapter Summary

Based on thorough review of literature, nineteen (19) features and facilities are detected, which are: rubbish bin, washroom, park lighting, track or path, signage, natural landscape, park furniture, soft designed landscape, prayer room, hard designed landscape, children playground, picnic or camping area, drinking fountain, kiosk or vending machine, outdoor gym facilities, recreational facilities, outdoor sports facilities, indoor sports facilities, and water activity facilities.

Generally, the provision of features and facilities circulated with dimensions such as adequacy, density, design, feeling, placement, safety and species as summarized in Table 2.3.

Whereas for maintenance of all features and facilities in park circulated with dimension

cleanliness, functionality, safety and aesthetic Table 2.4. In order to measure the performance of public park, it is reviewed that overall satisfaction and willingness to revisit are fit indicators to measure the park performance. Lastly, present perception of public park study presently has covered seven states and one federal territory in Malaysia Table 2.5.

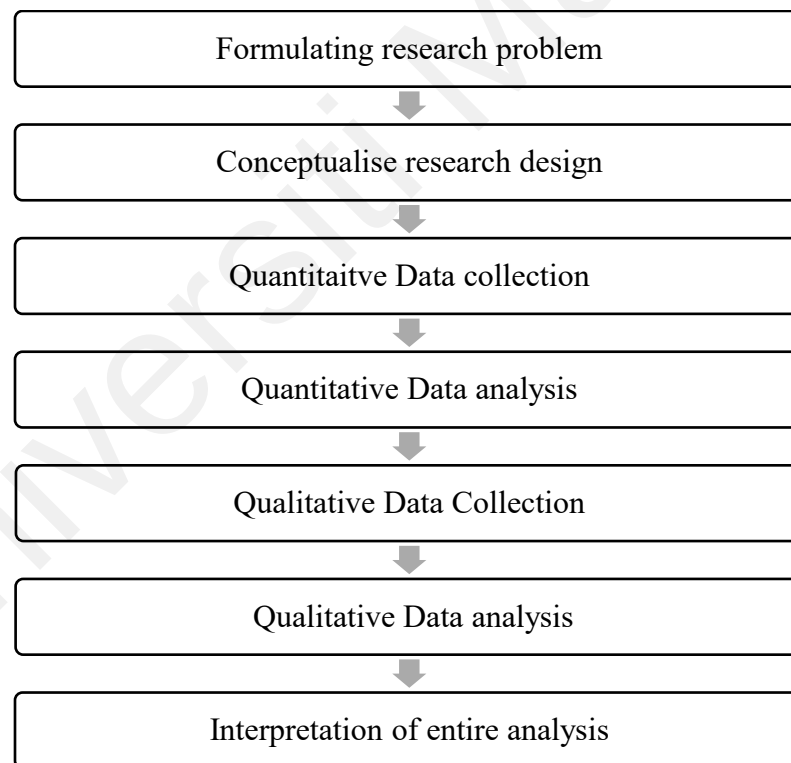
Universiti Malaya

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Introduction

Sileyew (2019) defined that research methodology is a beginning to end process where researchers ought to perform in their research. Kumar (2018) described that research is a systematic search of conclusion or inference from an observed phenomenon. Figure 3.1 is simplified combined research process adopted from Kumar (2011) and Creswell (2009) for this study.



**Figure 3.1: Research process**

Source: Creswell (2009); Kumar (2011)

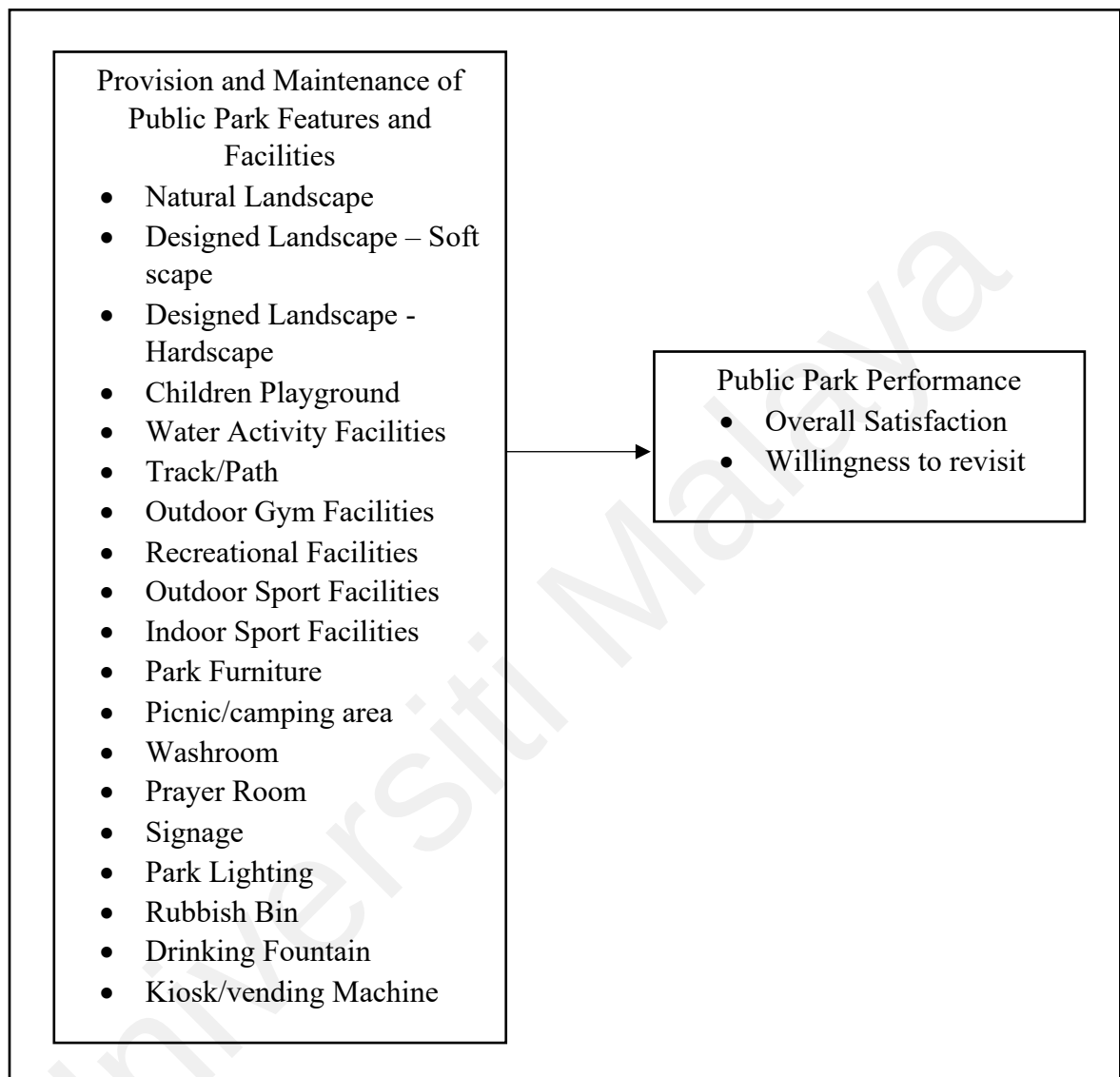
### **3.2 Formulation Research Problem**

Kumar (2011) outlined that the sources on formulation of research problem derived from surround people, problem, programme, or phenomenon. Commonly, research problem has a minimum amalgamation of two sources for instance, analysis of a group of people to determine the presence of existing issues related to their lives. In this stage, researchers identified subject area related to their interest of study and come out with idea that would contribute to existing body of knowledge. Subject area are usually broad and the identification of subject area commonly involved general review of literature (Kumar, 2011).

After determination of subject area, thorough literature review is conducted to delved into and dissect broad subject area into subarea to identify the gap and hence conceptualise research problem, and assist in developing theoretical or conceptual framework (Kumar, 2011). According to Larabee (2009), literature selected for review ought to be from trusted resources which are defined into three types namely primary sources e.g. interviews, newspaper articles, dissertation and others; secondary source e.g. journal article or books and others.; and tertiary source which is combination of information from primary and secondary sources to produce information such as manual, chronologies, dictionaries and others.

In this research, document where its credibility and trustworthiness ensured such as newspaper articles and journals are selected in identify the research area and problem which led to the established of research topic “Prioritising the maintenance of public park features and facilities to improve the park user experience”. Subsequently, extensive review of literature found that there are several aspects found directly and indirectly bearing to perception of user towards provision and maintenance of park features and facilities. The objective of this study is to investigate relationship between the maintenance quality of

detected public park features and facilities towards public satisfaction. The conceptual framework was developed as shown in Figure 3.2.



**Figure 3.2: Conceptual framework**

### 3.3 Research Design

According to Kumar (2011), research design is a system for organizing, constructing, and executing an investigation with the aim of answering specific research questions effectively. In this research, researcher require to identify suitable procedures and logical arrangement to ensure the validity, objectivity, and accuracy of research. Based on Creswell (2009), there



are three types of research design which are quantitative design, qualitative design, and mixed-method design.

In this research, author has adopted mixed-method research design to obtain required data. Mixed-methods approach to research is an innovative and increasingly popular method in the social sciences (Saraswati & Devi, 2023). According to Academy of Social Sciences (2021), social science is study of social phenomena of individual, communities and societies interacting with environment such as built environment. Surroundings such as buildings or park where human activity allowed takes place are known as built environment (Kaklauskas & Gudauskas, 2016). Thus, in this study, the study of individual who attended the park which is a human made surroundings led to selection of mixed-method design as method to collect data in this research. The research design is similar to methodology adopted by Goh and Rosilawati (2014) which studied on visitor perception towards Kinabalu Park in Malaysia.

Johnson et al. (2007) described that mixed-method research associate both quantitative and qualitative data for the breadth and depth understanding of a research topic. It is the incorporation of different data collection technique and analysis technique to maximise the forte of quantitative and qualitative method, thus heighten the validity and reliability of findings (Saraswati & Devi, 2023). Generally, there are six (6) strategies under mixed-method design which are sequential explanatory strategy, sequential exploratory strategy, sequential transformative strategy, concurrent triangulation strategy, concurrent embedded strategy, and concurrent transformative strategy (Creswell, 2009).

Sequential explanatory strategy is strongly quantitative leaning by gathering and analysing quantitative data in the initial phase of the research, followed by the collection and analysis

of qualitative data in the second phase which builds upon the results from the first phase (Creswell, 2009). It is well-suited in explaining and interpreting relationship of an phenomenon in detail at second stage using qualitative data collection method (Creswell, 2009).

Sequential exploratory strategy is antipode of sequential explanatory strategy whereby it is strong qualitative leaning by gathering and analysing qualitative data in the initial phase of the research, followed by the collection and analysis of quantitative data in the second phase which builds upon the results from the first phase (Creswell, 2009). It is well-suited for testing variables to determine whether they can be generalised, or for examining how an phenomenon spreads within a selected population (Creswell, 2009).

Sequential transformative strategy collects data using both sequential explanatory and exploratory strategy. Researcher may first use quantitative data collection where subsequently result is brought forward to qualitative data collection or first use qualitative collection of data subsequently result brought forward to quantitative data collection to better understand a phenomenon (Creswell, 2009). This strategy contained theoretical perspective in guiding the study and it is ideal in exploring social problem such as inequality, discrimination, injustice and others (Creswell, 2009).

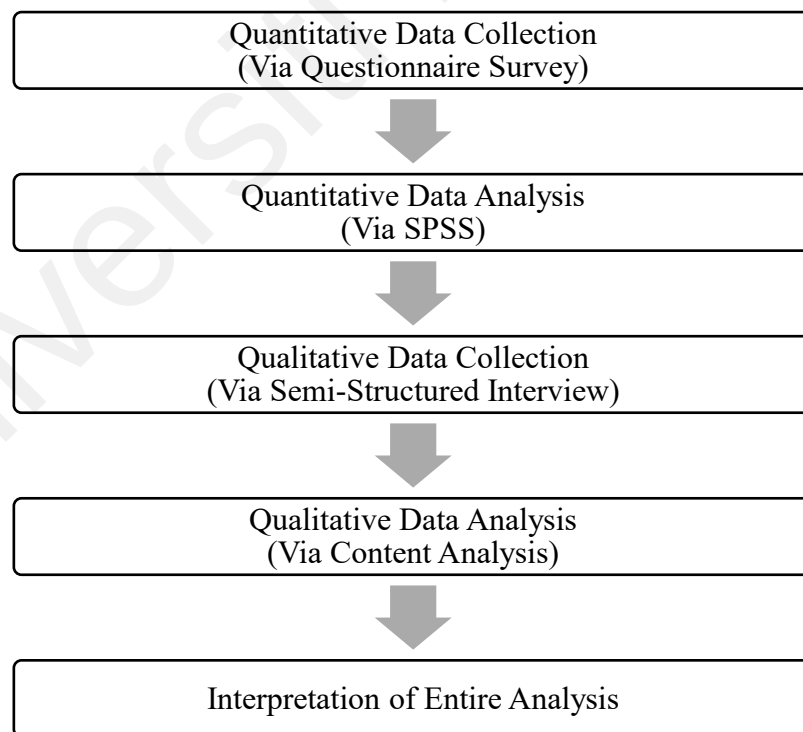
The concurrent triangulation strategy gathers both quantitative and qualitative data in the same phase and two sets of result generated are to reveal whether the data are align, diverge, or combination of both (Creswell, 2009). Unlike sequential strategy where data could be strongly quantitative or qualitative leaning, data generated from concurrent triangulation strategy are equally weighted (Creswell, 2009).

The concurrent embedded strategy consists of a primary method either quantitative or qualitative and a secondary method collected via qualitative or quantitative method as a support to primary method (Creswell, 2009). Secondary method is embedded in primary method hence priority is given to the primary method (Creswell, 2009). In addition, secondary method acted to quarry different question than primary method (Creswell, 2009).

For concurrent transformative strategy, it is similar to sequential transformative strategy whereby theoretical perspective guided the research. In concurrent transformative strategy, data collected either through concurrent triangulation strategy where quantitative and qualitative data collected in one phase or concurrent embedded strategy where primary method either quantitative or qualitative and a secondary method collected via qualitative or quantitative method as a support to primary method (Creswell, 2009). This strategy best suit to study perspective of social problem such as inequality in detail (Creswell, 2009).

In this research, author adopted sequential strategy over concurrent strategy as this research is intended to explain a phenomenon than determine if data are aligned, diverge, or combination of both. As sequential strategy contained three strategies which are sequential explanatory strategy, sequential exploratory strategy, sequential transformative strategy, author adopted sequential explanatory design over sequential exploratory and sequential transformative design. This research is intended to study the relationship of park user perception towards condition of features and facilities, thus sequential explanatory strategy is selected as Creswell (2009) mentioned that this strategy well-suited in explaining and interpreting relationship of a phenomenon. Bowen and Radhakrishna (1991) described that perception is considered a phenomena and Ivankova et al. (2006) entailed that to capture details of a phenomena, research prevalently employ sequential explanatory designs.

In this research, sequential explanatory design was adopted from Creswell (2009) (Figure 3.3). The intention of two separated phase of data collection enable researcher to identified and gain a deeper understanding towards user perception on provision and maintenance of features and facilities in public park. In the first phase, quantitative method addressed the public perception towards provision and maintenance of park features and facilities. The research is strong quantitative leaning as a many researchers used quantitative method in study of park user perception, for instance in Ali and Nawawi (2006); Jaafar and Tudin (2010); Rouhi et al. (2017)'s research. Subsequently, information from first phase explored further in second qualitative phase. In the second phase, interview used to probe what are the embedded aspect which affect the perception of park user in order to better understand and explain the quantitative outcome.



**Figure 3.3: Sequential explanatory design**

Source: Creswell (2009)

### **3.4 Data Collection**

#### **3.4.1 Phase One: Quantitative Data Collection – Questionnaire Survey**

In this research, data collection divided into two phases. First phase is quantitative data collection via questionnaire survey. Preston (2009) defined that questionnaire survey is a method in collecting statistical information on perception of a population using a structured set of questions. Edgar and Manz (2017) stated that survey is part of descriptive research broadly apply in satisfaction survey to describe the population. Generally, questionnaire survey provides comprehension on peoples' knowledge, belief, attitude, values, and behaviour (Fink, 2003; Kothari, 2004; Sommer & Sommer 1991). In addition, quantitative survey besides allow researcher to describe phenomena numerically, it also facilitate in determine relationship between two or more variables (Kumar, 2011).

Prior to distribution of questionnaire to vast respondents, it is advised that researcher shall validate the quality of questionnaire. In order to validate the questionnaire, pilot testing is deployed. Wadood et al. (2021) stressed that for a large-scale survey, pilot testing plays an essential role by increasing the survey's reliability, validity, and practicability. The intended research population in this study is anyone who attended to public park. Therefore, people who went to public park are selected in piloting the questionnaire to ensure formulated questions is being understood by the respondent. Ten (10) respondent was selected in pilot the questionnaire. This is adopted from Goh and Rosilawati (2014) whereby the questionnaire for the study on park satisfaction was pilot tested on ten (10) park visitors before it was officially distributed. Questionnaires is corrected based on the feedback attained from pilot testing. Upon complete correction of questionnaire, full-scale distribution take place.

According to Stockemer (2019), questionnaire may consist of open-ended, closed-ended, or a mixture of open and closed ended questions. In this research, open-ended questions are not applicable in descriptive analysis. Therefore, closed-ended questions are emphasised in this research. Close-ended question allow more consistent conclusion, easy to code, and require less time and energy during data input (Riffenburgh, 2012). There are several types of closed-ended survey questions. In this research, multiple choice and scale – Likert Scale were adopted in this research. Multiple choice questions often used to collect general profile of visit. An example of multiple-choice question in this research as follows (see Appendix A):

*Age:*

☐ Below 20    ☐ 21 to 30    ☐ 31 to 40    ☐ 41 to 50    ☐ 51 to 60    ☐ Above 60

In terms of measuring park user perception towards features and facilities, Likert Scale was adopted in this research as Hodge and Gillespie (2005) affirmed that Likert scale are ideal in measure attitude. In this research, 5-points Likert Scale is chosen to measure the human perception. 5-points Likert Scale are commonly used in many social sciences perception research for instance, Danjaji et al. (2018); Ismail et al. (2017); Sapari et al. (2013) used 5-point Likert Scale in measure the users' satisfactory towards green open spaces. The researcher then arranged choices on a continuum with extreme position at the end points. For instance, respondent is asked to indicate on importance of provision of park features and facilities as depicted in the following (see Appendix A):

*Please rate the importance of provision and maintenance of the following park feature and facilities.*

*Very Unimportant*

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

*Very Important*

In addition, 6-points Likert Scale was adopted in measuring the overall performance of public park. According to Chomeya (2010), despite there is discrimination on 6-points Likert Scale compared to 5-point scale, it is ideal when there are many variables which may burden the respondent when answering the question. There are many features and facilities identified via the literature review. Therefore, it might be strenuous for respondent to rate performance of each individual features and facilities. An example of 6-points Likert Scale question is depicted as follows:

*Please rate the overall satisfaction level towards the recreation park that you last visited.*

☐ Very unsatisfied    ☐ Unsatisfied    ☐ Slightly unsatisfied

☐ Slightly satisfied    ☐ Satisfied    ☐ Very unsatisfied

Researchers collected quantitative data by physically attending public parks and approached in a very respectful way to park users who appeared to be capable of answering questionnaires. Prior to request participation, potential respondents were provided with information about the survey's purpose, duration of time commitment, and how data will be used. Willingness to participate were important in collecting data as Stadelmaier et al. (2022) mentioned that willingness of participant to participate in a survey ensure validity of data. Whenever a person declines to participate in a survey, biasness will occur, affecting the validity of the survey. (Dutwin et al., 2015).

### **3.4.2 Phase Two: Qualitative Data Collection**

Pathak et al. (2013) stated that in a quantitative data collection, the involvement of qualitative collection of data provide better understanding to the research topic. Schonfeld and Dreyer (2008) stated that qualitative approach allows the study of phenomena in detail. The primary intention of this research relies on quantitative approach and the adoption of qualitative

approach is to validate the quantitative data. Derived from data analysed from quantitative analysis, the provision and maintenance of park features and facilities affected the park user perception is brought forward to probe further on the underlying aspect that affect the park user.

There are three types of qualitative data collection methods which are interviews, observation, and secondary sources (Kumar, 2011). In this study, interview was selected to validate the quantitative result. Jamshed (2014); Sahu (2013) stated that interview is the most common method to collect qualitative data. Personal interview, telephonic interview, and chatting are among the interview methods (Sahu, 2013). Generally, interview questions can be conducted in structured and unstructured manner (Potter & Wetherell, 1994). The sequence of question in structured interview is fixed where in unstructured interview, next question is generated based on the respond from respondent (Williamson, 2002).

In this research, semi-structured interview was chosen. Semi-structured lies between the nature of structured and unstructured interview where it contained a standard list of questions initially and subsequent question is raised based on the lead of respondent (Williamson, 2002). This research is intended to excavate underlying aspect of the phenomena, hence interview was conducted to attained more detail information from the respondent to make more objective assumption. McGrath et al. (2019) stressed that effective interviews begin with careful planning. Therefore, before collection of qualitative data, a set of predetermined questions were prepared and simulation of interview was executed as (Harerimana et al., 2024) pointed that researchers with less experience could benefit from simulated interviews prior to conducting qualitative research. The simulation of interview was conducted with two (2) potential participants.



Similar to quantitative data collection, researchers collected qualitative data by physically attending public parks and approached in a very respectful way to park users who appeared to be capable of answering questionnaires. Prior to request participation, potential respondents were provided with information about the interview purpose and how data will be used. To ensure the reliability and validity of data, measures were taken to ensure the data validity and reliability. Compliance of respondent is a major problem that creates biasness during collection of data, hence willingness to participate in the interview is vital to ensure data validity (Thyer, 2009). To avoid biasness, verbal consent of respondent on their willing to partake the interview is considered. In terms of reliability, researcher require to ensure transcript is accurately transcribed (Creswell, 2009). To ensure data accuracy, recording is adopted to ensure minimal error in data interpretation. In this research, audio recording was selected during the interview as Tong et al. (2007) stated that audio recording is accurate in reflecting a respondent's view. Interview questions (see Appendix B) were designed prior commencement of interview.

### **3.4.3 Sampling Technique**

In this research, quantitative questionnaire data was collected via probability sampling - simple random sampling technique without replacement. Rea and Parker (1997) expressed that simple random sampling respondent are chosen based on individual presence on the site and individual willingness to participate in the research. During collection of data, researcher ensured no same respondent answered the questionnaire by asking if the respondent has answered the questionnaire. This technique is adopted by Goh and Mahmood (2016); Hussein (2014a); Mohamed and Othman (2012) who are local researchers that conduct Malaysia park perception studies.

Subsequently in qualitative data collection, non-probability convenience sampling technique is adopted. Galloway (2005) defined that non-probability convenience sampling refers to selecting participants who are easy for the researcher to access or who are readily available at the time of collection of data. In addition, there is no specific pattern in respondent selection for non-probability convenience sampling (Galloway, 2005). In this research, based on convenience of author, park goer who attending the park when author collect data were chosen. Despite Stratton (2021) mentioned that result of non-probability convenience sampling technique less reliable to represent the general population, however, this research adopted sequential explanatory strategy which heavily rely on quantitative data collection, qualitative data is collected with interest to find out the commonality of selected respondent toward perception on provision and maintenance of public park features and facilities. Therefore, convenience sampling is opted.

#### **3.4.4 Research Area**

Malaysia is made up by thirteen (13) states which are Johor, Kedah, Kelantan, Malacca, Negeri Sembilan, Pahang Perak, Perlis, Pulau Pinang, Sabah, Sarawak, Selangor, Terengganu and three federal territories include Federal Territory Kuala Lumpur, Putrajaya, and Labuan. According to National Landscape Department (2019), play lot is present in all states and federal territories except Perlis state, play field is available in all thirteen (13) states and federal territories, neighbourhood park identical to play lot is present in all states and federal territories except Perlis state, local park is identical to play field where it exist in all states and federal territories, urban parks are available only in Johor, Kedah, Perak, Pulau Pinang, Sabah, Sarawak, Selangor, Terengganu, and the Federal Territories of Kuala Lumpur, Putrajaya, and Labuan, lastly, regional park are available only in Johor, Pahang, Sabah, Selangor and Federal Territories of Kuala Lumpur, Putrajaya, and Labuan. A summary of

category of public park available in respective states and federal territories is illustrated in following Table 3.1:

**Table 3.1: Category of public park in Malaysia**

| States or Federal Territories \ Public Park Category | Play Lot | Play Field | Neighborhood Park | Local Park | Urban Park | Regional Park |
|------------------------------------------------------|----------|------------|-------------------|------------|------------|---------------|
| Johor                                                | √        | √          | √                 | √          | √          | √             |
| Kedah                                                | √        | √          | √                 | √          | √          | x             |
| Kelantan                                             | √        | √          | √                 | √          | x          | x             |
| Melaka                                               | √        | √          | √                 | √          | x          | x             |
| Negeri Sembilan                                      | √        | √          | √                 | √          | x          | x             |
| Pahang                                               | √        | √          | √                 | √          | x          | √             |
| Perak                                                | √        | √          | √                 | √          | √          | x             |
| Perlis                                               | x        | √          | x                 | √          | x          | x             |
| Pulau Pinang                                         | √        | √          | √                 | √          | √          | x             |
| Sabah                                                | √        | √          | √                 | √          | √          | √             |
| Sarawak                                              | √        | √          | √                 | √          | √          | x             |
| Selangor                                             | √        | √          | √                 | √          | √          | √             |
| Terengganu                                           | √        | √          | √                 | √          | √          | x             |
| Federal Territories                                  | √        | √          | √                 | √          | √          | √             |

Source: National Landscape Department (2019)

Derived from Chapter 2 present public park perception studies in Malaysia, it is detected that the present research on public park perception covered states such as Johor, Pahang, Penang, Perak, Putrajaya, Sabah, and Selangor and Federal Territory Kuala Lumpur, therefore, it is detected that there are still many public parks yet to be studied. In addition, Azenan et al. (2021) had recommended the study on perception towards public park features and facilities to more categories of park. Thus, this research is intended to study all categories of public park that present in all states and federal territories in Malaysia.

### 3.4.5 Research Population

An accurate and valid research outcome relies upon the identification of a study population. This research focused on the perception of public park user, hence user who attended to public park was considered as research population. Since public park is a recreation place

that open to all people, hence population of Malaysia is was considered as research population. According to Department of Statistics Malaysia (DOSM) (2021), Malaysia has an estimated population of 32.7 million. However, Krejcie and Morgan (1970) emphasised to accurately represent the research population, an appropriate sample size is necessary. For a population more than one hundred thousand (100,000), a minimum sample size of three hundred eighty-four (384) is required (Krejcie & Morgan, 1970). Therefore, minimum sample size of this research no less than three hundred eighty-four (384).

Andrade (2020) mentioned that a more accurate results will be obtained if the sample size is larger than what is necessary. To achieve more accurate result, two thousand (2000) questionnaires were distributed to park user whom attending public park by the researcher. Fosnacht et al. (2017) mentioned that an accurate result required response rate between 20% to 25%. In this research, a total of two thousand (2000) questionnaire were answered and returned. However, after thorough check of returned questionnaire, it is identified that there are one thousand six hundred fifty-eight (1658) valid returned questionnaire and three hundred forty-two (342) of invalid returned questionnaire. Invalid questionnaires are due to no marking on perception towards particular features and facilities in questionnaire. A summary of response rate is depicted in Table 3.2:

**Table 3.2: Response of questionnaire survey**

| <b>Description</b>       | <b>Frequency</b> | <b>Percentage</b> |
|--------------------------|------------------|-------------------|
| Sent out questionnaire   | 2000             | 100.0             |
| Returned questionnaire   | 2000             | 100.0             |
| Incomplete questionnaire | 342              | 17.1              |
| Valid questionnaire      | 1658             | 82.9              |

Note: Percentage based on sent out questionnaire

Subsequently in qualitative data collection Dworkin (2012) suggested that in order to have a more clarity in qualitative data collect, an interview of between 25 to 30 respondent is recommended. Thus, in this stage, researcher approached and interviewed thirty (30) respondents who are attending public park to collect data.

### **3.5 Data analysis**

In pursuit of the collected data, researchers brought collected data to the next step which is data analysis. Prior entering the coding process, data editing are be carried out by the researcher. Kumar (2011) emphasised that completeness of questionnaire is important to ensure validity of the result. In the event there is incompleteness of answered question, based on the nature of research question, researcher is advised to cautiously make inference, recall, or going back to respondent. This is research, especially in qualitative data collected, in the event of error occur, research took upon recalling response from respondent carefully.

Later, collected data were coded according to the question's nature. Raw data can be effectively analysed when information is transformed into numerical values known as codes (Kumar, 2011). Subsequently, data entry using codes is commenced using Statistical Package for Social Science (SPSS). Landau and Everitt (2004) mentioned that SPSS is a strong, user-friendly data manipulation and statistical analysis software package. Students and researchers in psychology, economics, neuroscience, and other behavioural sciences found the kit particularly valuable. Therefore, SPSS is used to study the perception of park user population for this research.

### **3.5.1 Descriptive and inferential statistics**

According to Maravelakis (2019), descriptive statistics is an elementary process in statistical analysis that present data and measure relationships. Sahu (2013) expressed that descriptive statistic covers univariate analysis technique. Univariate analysis technique covers measure such as central tendency (Stockemer, 2019). Central tendency displayed via frequency distribution. Frequency distribution often project data in the form of table that divides data into groups and reveal data values occurs in each group (Manikandan, 2011a). Besides displaying data in the table form, pie chart, boxplots, and histograms are also another form to project data (Stockemer, 2019).

In addition, this research is intended to making inferences derived from a sample to investigate the relationship of variables. Stockemer (2019) expressed that bivariate analysis technique cover measure that investigate relationship and degree of association between variables. In order to achieve objectives of this study, which are to investigate relationship between maintenance quality and public perception, this bivariate analysis technique was adopted to analysed the data collected in this study.

#### **3.5.1.1 Descriptive Statistics - Central tendency - Mean**

To achieve the preferences among the features and facilities, central tendency - mean is adopted to rank the perception on provision and maintenance of features and facilities. Mean is the sum of all observation and divided by the total number of sample (Stockemer, 2019). The researcher added that mean is strongly influence by extreme number known as outlier. However, the measure of perception in this research is highly structured five-point ordinal

scale in determining the public park user perception, therefore, there is no outliers and hence ranking by using mean is adoptable in this research. The equation of mean,  $\bar{x}$  is stated below:

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n} = \frac{\sum_{i=1}^n x_i}{n}$$

Where  $x$  = observation;  $n$  = total number of samples

### **3.5.1.2 Descriptive and Inferential Statistics - Reliability analysis**

Prior investigate on the relationship, the set of variables in this case were the features and facilities are subjected to reliability analysis. Cronbach's alpha coefficient test was selected to test for the reliability analysis. Cronbach's alpha has been widely adopted in measuring the goodness of fit of data in many disciplines include social science (Taber, 2018). Cronbach's Alpha value ranges between 0.00 to 1.00. Generally, the higher the value, the variables are more reliable where the lower the value, least likely the variables are reliable. According to Zeller (2005), Cronbach's Alpha value that deemed acceptable between 0.7 to 0.8, adequate between 0.8 to 0.9, and excellent when it is 0.9 or higher, seemingly unfit when value between 0.6 to 0.07, and totally unfit when below 0.6. In this study, reliability analysis was performed for features and facilities provision and maintenance. From 1658 valid responses, Cronbach Alpha were found at 0.942 & 0.949 (see Appendix C). This denote that the features and facilities selected were highly reliable.

### **3.5.1.3 Inferential Statistics - Bivariate analysis (Spearman rank-order correlation)**

Samuel and Okey (2015) mentioned that correlation analysis examines if there is a relationship between variables. According to Sekaran (2003), the study on association between variables allow researcher make inference from the data collected. In this study

bivariate analysis is selected to measure the relationship between maintenance quality and public park performance. According to Sahu (2013), there are bivariate and multivariate analysis where bivariate examine relationship between two variables, multivariate measure relationship of more than two variables. In this study, bivariate analysis was opted as this research intended to investigate relationship between two variables which are maintenance quality and public park perception. The correlation coefficient measures the association of variables which fall between negative one (-1.0) to positive one (+1.0) where the mathematical sign signified direction of relationship and zero (0) represented no relationship (Samuel & Okey, 2015).

Generally, there are three types of correlation coefficient namely Pearson, Kendall's tau-b, and Spearman coefficients in SPSS. The assumption on selection of correlation coefficient is based on the nature of data whether it is nominal, ordinal, interval, or ratio. According to Kent State Univeristy (2022), Pearson correlation coefficient is adopted when data required are interval or ratio. Forthofer et al. (2007) pointed that when data is ordinal in nature, Spearman rank correlation coefficient is applicable. Kendall's tau-b is similar to Spearman coefficients, but it is however in this research, there is a tie in the data where according to Puth et al. (2015), when there tie in the data, Spearman is opted over Kendall's tau-b coefficient. As a result, Spearman rank-order correlation coefficient is selected for the study due to nature of data which is ordinal and there is tie in the data. The mathematical representation of Spearman's rank correlation coefficient is defined as:

$$r_R = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

Where  $d_i (i = 1, 2, \dots, n)$  is the difference in rank obtained in two different characters by the  $i$ th individual.



### **3.5.2 Qualitative Data Analysis – Content analysis**

There are three (3) types of qualitative data analysis which are thematic analysis and category coding, qualitative content analysis, and discourse analysis. Thematic analysis and category coding are suitable for research that adopt theory such as constructivist or critical theory to analyse content of interview data and observation data (Williamson et al., 2018). Generally, constructivism refers to the way individuals actively construct their own understanding of reality through their cognitive processes in the social sciences (Shannon-Baker, 2023). Critical theory comprehended human experience to seek social change by challenge idea of a single truth (DePoy & Gitlin, 2016).

Discourse analysis suitable for linguistic research. Discourse analysis examine relationships between language-in-use and the social environment (Johnson & McLean, 2020). Generally, discourse analysis mainly researched on how language played in production and maintenance of knowledge, and how it is related to power (Johnson & McLean, 2020). Lastly for qualitative content analysis, it is a method examines the meaning of a message by classifying and categorizing its content into categories that describe its topics, themes, and context (Williamson et al., 2018).

Qualitative content analysis and thematic analysis are highly similar in processing data (Vaismoradi et al., 2013). Generally, thematic analysis required researcher to consider both obvious information and hidden information from data collected where content analysis allow researcher to choose analyse on obvious or hidden information (Vaismoradi et al., 2013). In addition, Allen (2017); Elo and Kyngäs (2008) pointed that content analysis is suitable to describe a phenomenon in a conceptual form. This research focused on the study

of a phenomena and do not contain theory nor study of language-in-used, hence content analysis was selected to examine data collected from semi-structured interview.

Content analysis was subjected to the following process: Step one: Organizing data by examining topics that the researcher aims to address and identifying emerging ideas through the creation of a chart; Step two: Identifying and organizing ideas and concepts by selecting specific words or ideas and categorizing them systematically; and Step three: Developing overarching themes in the data by assigning a theme to categorized ideas or words (O'Connor & Gibson, 2003). In this research, recorded interview responses were jotted down thoroughly into a table, subsequently a condensed sentence was formed derived from voice record and specific word was picked to build a category. Lastly a theme was build based on created category. This research is heavily lean on quantitative result and qualitative data collected purpose to validate the quantitative analysis. Meantime, qualitative analysis in this research also helped in identifying other possible underlying aspect that affect public park user perception towards public park features and facilities provision and maintenance.

In general, the descriptive and inferential statistics is adopted to achieve the objectives are summarised as follow in Table 3.3:

**Table 3.3: Summary of selected statistics**

| <b>Type of statistics</b>                      | <b>Explanation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Descriptive statistics - central tendency-mean | Central tendency mean is a statistic that indicate the average value of an entire distribution by adding all values in the data set and divided by total number of sample size (Manikandan, 2011b). In this research, in order to rank perception towards provision and maintenance of park features and facilities, perception of respondent were coded into numerical code in SPSS and computed to find out the mean of perception towards provision and maintenance of features of facilities in public park. |

Table 3.3, continued

|                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reliability analysis                                                          | Reliability analysis measure internal consistency of a set of variables in a group to determine if the set of variables are reliable (University of California (UCLA), 2020). In this research, prior investigate the relationship of variables Cronbach Alpha 0.949 & 0.942 were computed and acquired (see Appendix C) which indicate that features and facilities selected were fit to further investigate its relationship. |
| Inferential Statistics - Bivariate analysis (Spearman rank-order correlation) | Bivariate analysis examine relationship between two variables (Sahu, 2013). In this research, relationship between maintenance experience of public park features and facilities with public park performance were examined. Spearman rank-order correlation is selected as data is ordinal in nature (Forthofer et al., 2007).                                                                                                 |
| Qualitative data analysis - Content analysis                                  | Content analysis examine message by first arrange content into category which later condense into theme (Williamson et al., 2018). In this research, to validate result from quantitative analysis, interview data collected was recorded, categorised, and theme was formed accordingly.                                                                                                                                       |

### 3.6 Interpretation

In this phase, the statistical result generated from SPSS is reviewed in measure up with previous literature. According to Kumar (2011), interpretation is report writing that deliver the result of the research topic and draw conclusion to the research. In this research, findings were discussed based on the statistical analysis generated from survey questionnaire and semi-structured interview. Result obtained from survey questionnaire are compared to previous research and interview are to validate the result from quantitative analysis. Conclusively, conclusion, recommendation or suggestion is drawn up based on the findings and analysis.

### **3.7 Chapter Summary**

Research methodology is essential in performing research. Choosing appropriate approaches to the research is aided by the study of research design. Based on thorough review, sequential explanatory design is adopted as the design of this research. Sequential explanatory design is a combination of quantitative and qualitative approaches for data collection and analysis. This design allowed researcher to excavate underlying aspect for understanding of a phenomenon. The data is collected in two successive phases. First phase data is collected via questionnaire survey, second phase data is collected by semi-structured interview. The main findings collected through questionnaire survey were analysed using SPSS software while findings from semi-structure interview collected to validate the result derived from questionnaire survey. All findings are presented in the following chapter.

## CHAPTER 4

### FINDINGS & DISCUSSION

#### 4.1 Introduction

This chapter describe analysis of data collected that include quantitative and qualitative data. Survey questionnaire is used to collect quantitative data where semi-structured interview is adopted for collection of qualitative data. This research adopted sequential explanation design where collection of data is conducted in two successive phase whereby quantitative data is prioritised. Thus, the analysis of data in quantitative is collected and analysed prior semi-structured interview whereby the qualitative data acted as support to explain the phenomena in quantitative data collected. All the data is analysed thoroughly to achieve the research objectives.

#### 4.2 Questionnaire Survey Result

The phase one quantitative data collection has collected one thousand six hundred and fifty-eight (1658) valid questionnaire and SPSS software is deployed in analysis of data. In order to answer research question, type of analysis result is depicted in Table 4.1 to achieve the research objectives:

**Table 4.1: Paring of questionnaire survey analysis result with research objective**

| <b>Type of Analysis Result</b>                           | <b>Research Objectives</b>                                                                                              |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Ranking Analysis                                         | To identify public preferences and experience towards provision and maintenance of public park features and facilities. |
| Correlation Analysis                                     | To investigate relationship between maintenance quality of public park and public performance.                          |
| Combination of Ranking Analysis and Correlation Analysis | To propose the maintenance priority of features and facilities that fabricate public experience.                        |

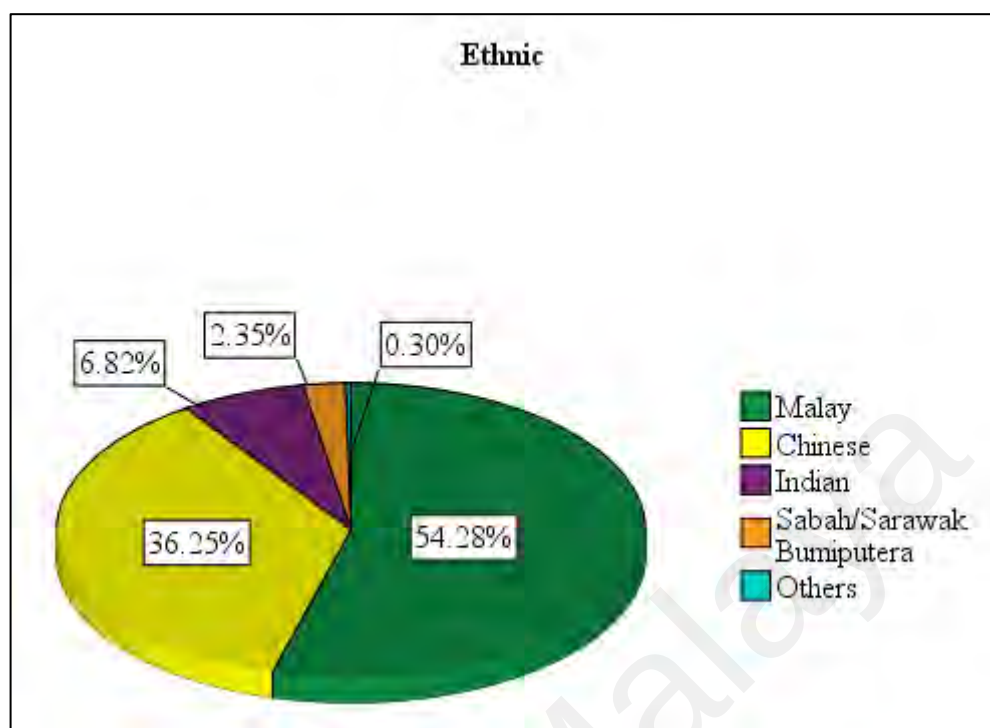
#### 4.2.1 Descriptive Analysis Result

Table 4.2 depicted the gender of respondent attended to public park. It is found that the gathered questionnaire survey respondents are majority of more female than male park goer. Based on the analysis, out of 1658 respondents, male park goer accounted 38.9 percent where female accounted 61.1 percent in this research.

**Table 4.2: Gender of respondent**

| <b>Gender</b> | <b>Frequency</b> | <b>Percentage</b> |
|---------------|------------------|-------------------|
| Male          | 645              | 38.9              |
| Female        | 1013             | 61.1              |
| <b>Total</b>  | <b>1658</b>      | <b>100.0</b>      |

Figure 4.1 depicted ethnic composition of respondent. It is encountered that majority of the park goers are Malay, contributing 54.28 percent of total respondents. Subsequently the Chinese constituted 36.25 percent, Indian 6.82 percent, and indigenous from East Malaysia comprised of 2.35 percent. Besides, there are also 0.30 percent of ethnic that constitute as others in this study. Others referred to immigrant or migrant in this study. According Nagaraj et al. (2009), immigrant or migrant may from Bangladesh, Indonesia, Philippine, Myanmar, Singapore. Brunei, Japanese and others.



**Figure 4.1: Ethnic**

Table 4.3 depicted the age distribution of the respondent in this study. It found that most respondent were age between 21 to 30 years old which accounted 64.5 percent of total respondent. This is similar to Azenan et al. (2021) findings where 84 percent of the respondent are age between 20 to 29 years old. Respondent below age 21 and after age 30 is found at least four folds lesser compare to the majority. For instance, respondent age younger than 20 years old is 4.7 folds less than respondent age between 21 to 30 years old, accounted 13.6 percent of total respondent. Respondent of age between 31 to 40 years old, 41 to 50 years old, 51 to 60 years old, and more than 60 years old accounted 8.7, 7.8, 3.0, and 2.4 percent respectively.

**Table 4.3: Age**

| Age                | Frequency | Percentage<br>(N=1658) |
|--------------------|-----------|------------------------|
| Below 20 years old | 225       | 13.6                   |
| 21 to 30 years old | 1069      | 64.5                   |
| 31 to 40 years old | 144       | 8.7                    |
| 41 to 50 years old | 130       | 7.8                    |
| 51 to 60 years old | 50        | 3.0                    |

|                      |             |              |
|----------------------|-------------|--------------|
| Table 4.3, continued |             |              |
| Above 60 years old   | 40          | 2.4          |
| <b>Total</b>         | <b>1658</b> | <b>100.0</b> |

Table 4.4 illustrated the monthly salary earned by each respondent. More than half of the respondent earning below RM 2000, accounted one thousand and ninety-five (1095) of the total one thousand six hundred and fifty-eight (1658) respondents. Number of respondents that earn more than RM 2000 is relatively low. For instance, two hundred and ten (210) respondents earn between RM 2001 to RM 3000, two hundred and nine (209) respondents earn above RM 4000, where respondents that earn between RM 3001 to RM 4000 has the least number, accounted one hundred and forty-four (144) people.

**Table 4.4: Monthly salary**

| <b>Monthly salary</b> | <b>Frequency</b> | <b>Percentage<br/>(N=1658)</b> |
|-----------------------|------------------|--------------------------------|
| Below RM 2000         | 1095             | 66.0                           |
| RM 2001 to RM 3000    | 210              | 12.7                           |
| RM 3001 to RM 4000    | 144              | 8.7                            |
| Above RM 4000         | 209              | 12.6                           |
| <b>Total</b>          | <b>1658</b>      | <b>100.0</b>                   |

Table 4.5 illustrated perceptions on importance of provision of features and facilities in a park. According to the Table 4.5, arranged in a descending manner of importance, the presence of hard designed landscape (Rank 10), prayer room (Rank 9), soft designed landscape (Rank 8), park furniture (Rank 7), natural landscape (Rank 6), signage (Rank 5), track or path (Rank 4), lighting (Rank 3), washroom (Rank 2), and rubbish bin (Rank 1) were features rated crucial to support the park goer during their visit to park. The mean of these stipulated features is above 4.00 which surpasses the category “Important” and is marched closed to “Very important” feature must-have in a park. In a five point Likert scale analysis, Au Yong et al. (2019) mentioned that features above mean value of 4.00 are notable features concerned by the chosen stakeholder in a study.



In terms of perception in importance on provision, the research result was partly supported by Mansor et al. (2019) that found provision of toilet, prayer room, gazebo, seating, kiosk, and dustbins were features that were important to park user in public park within Kuala Lumpur. Toilet, prayer room, and dustbins were confirmed vital, conversely, kiosk, and gazebo were found less important to park users in this research. Apart from the focus on provision of features of mean value above 4.00, the features with a mean value below 4.00 shall not be neglected. These features were quite important to support all kinds of reasons in attending to park and shall not be left out support the community health.

**Table 4.5: Ranking of importance on provision of public park's features and facilities**

| Rank | Importance                    | Mean<br>(n=1658) |
|------|-------------------------------|------------------|
| 1    | Rubbish Bin                   | 4.44             |
| 2    | Washroom                      | 4.41             |
| 3    | Park Lighting                 | 4.38             |
| 4    | Track/Path                    | 4.33             |
| 5    | Signage                       | 4.28             |
| 6    | Natural Landscape             | 4.27             |
| 7    | Park Furniture                | 4.23             |
| 8    | Designed Landscape Soft scape | 4.18             |
| 9    | Prayer Room                   | 4.09             |
| 10   | Designed Landscape Hardscape  | 4.04             |
| 11   | Children Playground           | 3.91             |
| 12   | Picnic/Camping Area           | 3.90             |
| 13   | Drinking Fountain             | 3.84             |
| 14   | Kiosk/vending machine         | 3.78             |
| 15   | Outdoor Gym Facilities        | 3.75             |
| 16   | Recreational Facilities       | 3.71             |
| 17   | Outdoor Sports Facilities     | 3.70             |
| 18   | Indoor Sports Facilities      | 3.56             |
| 19   | Water Activity Facilities     | 3.51             |

Table 4.6 illustrated ranking of public experience towards public park's features and facilities. According to Au Yong et al. (2019), feature values above the mean value of 4.00, in a five-point Likert scale analysis, are significant to the stakeholder chosen for the study. However, based on Table 4.6, all features and facilities had mean value below 4.00. The current

experience is less desirable as none of the features and facilities were found excellently provide park user a superb experience. All means were fell between “Moderate” and “Good”. Experience is intertwined with upkeep of the park (Fletcher & Fletcher, 2003). Therefore, the upkeep of park features and facilities can impact the experience of public park user.

Table 4.6, result generated picnic camping area has a mean value of 3.49, prayer room (mean value = 3.45), outdoor gym facilities (mean value = 3.40), recreational facilities (mean value = 3.24), outdoor sports facilities (mean value = 3.23), kiosk vending machine (mean value = 3.17), indoor sports facilities (mean value = 3.15), water activity facilities (mean value = 3.14) and drinking fountain (mean value = 3.11). These features and facilities are below the scale range of 3.50 which indicated that park user experience a lower moderate experience. Similarly, it is informed that these features and facilities are being maintained in a moderate way.

Despite however, greater part of the features and facilities were found given park user an experience that are approaching to “Good” feeling. For instances, arranged in an ascending manner of excellency in experience were: Rank number nine, the washroom (mean value =3.51), rank number eight, the children playground (mean value = 3.59), rank number seven, the signage (mean value = 3.68), rank number six, the hardscape and park lighting (mean value = 3.74), rank number five, the park furniture (mean value = 3.75), ranked number four, the rubbish bin (mean value = 3.77), ranked number three, the soft scape (mean value = 3.84). rank number two, the natural landscape (mean value = 3.90) & rank number one, the track or path (mean value = 3.92). It is represented that these features and facilities are being maintained at quite good level and therefore gave park goer a near-good experience.

**Table 4.6: Ranking of public experience towards public park's features and facilities**

| <b>Rank</b> | <b>Experience</b>             | <b>Mean<br/>(n=1658)</b> |
|-------------|-------------------------------|--------------------------|
| 1           | Track/Path                    | 3.92                     |
| 2           | Natural Landscape             | 3.90                     |
| 3           | Designed Landscape Soft scape | 3.84                     |
| 4           | Rubbish Bin                   | 3.77                     |
| 5           | Park Furniture                | 3.75                     |
| 6           | Park Lighting                 | 3.74                     |
| 6           | Designed Landscape Hardscape  | 3.74                     |
| 7           | Signage                       | 3.68                     |
| 8           | Children Playground           | 3.59                     |
| 9           | Washroom                      | 3.51                     |
| 10          | Picnic Camping Area           | 3.49                     |
| 11          | Prayer Room                   | 3.45                     |
| 12          | Outdoor Gym Facilities        | 3.40                     |
| 13          | Recreational Facilities       | 3.24                     |
| 14          | Outdoor Sports Facilities     | 3.23                     |
| 15          | Kiosk Vending Machine         | 3.17                     |
| 16          | Indoor Sports Facilities      | 3.15                     |
| 17          | Water Activity Facilities     | 3.14                     |
| 18          | Drinking Fountain             | 3.11                     |

#### 4.2.2 Correlation between experience towards maintenance of public park features and facilities with public park performance

The relationship between the perception towards maintenance of park features and facilities and public park performance was studied and analysed through SPSS software. The correlation analysis result is shown in Table 4.7.

**Table 4.7: Correlation between experience towards maintenance of public park features and facilities with public park performance**

| Park Features and Facilities   | Park Performance Indicator  |                       |                             |                       |
|--------------------------------|-----------------------------|-----------------------|-----------------------------|-----------------------|
|                                | Overall Satisfaction        |                       | Willingness to Revisit      |                       |
|                                | Correlation Coefficient (r) | Significant Value (p) | Correlation Coefficient (r) | Significant Value (p) |
| Natural Landscape              | .293**                      | .000                  | .155**                      | .000                  |
| Designed Landscape – Softscape | .312**                      | .000                  | .144**                      | .000                  |
| Designed Landscape – Hardscape | .299**                      | .000                  | .105**                      | .000                  |
| Children Playground            | .252**                      | .000                  | .104**                      | .000                  |
| Water Activity Facilities      | .190**                      | .000                  | .055*                       | .025                  |
| Track/Path                     | .312**                      | .000                  | .146**                      | .000                  |
| Outdoor Gym Facilities         | .208**                      | .000                  | .155**                      | .000                  |
| Recreational Facilities        | .231**                      | .000                  | <b>.046</b>                 | <b>.061</b>           |
| Outdoor Sport Facilities       | .198**                      | .000                  | .086**                      | .000                  |
| Indoor Sport Facilities        | .159**                      | .000                  | <b>.047</b>                 | <b>.056</b>           |
| Park Furniture                 | .293**                      | .000                  | .103**                      | .000                  |
| Picnic/Camping Area            | .237**                      | .000                  | .102**                      | .000                  |
| Washroom                       | .265**                      | .000                  | .074**                      | .003                  |
| Prayer Room                    | .250**                      | .000                  | .084**                      | .001                  |
| Signage                        | .278**                      | .000                  | .110**                      | .000                  |
| Park Lighting                  | .276**                      | .000                  | .100**                      | .000                  |
| Rubbish bin                    | .283**                      | .000                  | .100**                      | .000                  |
| Drinking Fountain              | .200**                      | .000                  | <b>.042</b>                 | <b>.084</b>           |
| Kiosk/Vending Machine          | .198**                      | .000                  | .081**                      | .001                  |

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

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

#### **4.2.2.1 Natural Landscape and Public Park Performance**

According to the statistical analysis shown in Table 4.7, the maintenance experience of natural landscape was found significantly correlate with public park user overall satisfaction and their willingness to revisit. The correlation coefficient achieve for overall satisfaction is 0.293 and 0.155 for willingness to revisit, both performance indicators projected significant at value  $p < 0.05$ . The result supported Liu and Xiao (2020) whom mentioned park user satisfaction requires ongoing maintenance of natural features. Besides, Fletcher and Fletcher (2003) mentioned that water features that is trash free is essential to park visitor satisfaction. Therefore, maintenance on the cleanliness of this natural landscape is essential. Constant upkeep of natural landscape also safeguard landscape visual quality (Liu & Xiao, 2020). As a result, when natural landscape is well-maintained, good landscape visual quality will enhance overall satisfaction of user and user will make a return visit for relaxation.

#### **4.2.2.2 Designed Landscape – Soft scape and Public Park Performance**

A significant correlation was detected between maintenance of soft scape and overall satisfaction and willingness of revisit as shown in Table 4.7. The correlation coefficient of overall satisfaction and willingness to revisit indicated a positive association 0.312 and 0.144 respectively. The significant value of overall satisfaction and willingness to revisit both indicated at  $p < 0.05$ . The result addressed the statement by Çay (2015) whom state public park performance may address through maintenance of plant. Besides, the result is paralleled to statement by Che Rose and Basri (2019) mentioning that presence and good management of soft scape such as flower bedding and tree were correlate to overall satisfaction and returning visit. It is natural for plants to grow every now and then. Hence, continuous maintenance and management of the park's greenery is necessary to ensure user satisfaction

(Jung et al., 2022), As a result, a well-maintained soft scape may allow visual enjoyment and psychological relief to the park user and hence fulfilled their need and promote re-visitation.

#### **4.2.2.3 Designed Landscape – Hardscape and Public Park Performance**

The findings from Table 4.7 demonstrated that the experience of hardscape is noteworthy to the public park performance. The strength of relationship projected at 0.299 for overall satisfaction and 0.105 in willingness to revisit. The significant value  $p$  for both public park performance variables were projected at  $p < 0.05$ . The experience that the hardscape provided in public park is significant to the public park user overall satisfaction and positive experiences are found to attract park users back to the park. Thus, this indicate that the maintenance played an important role. The maintenance of hardscape such as water fountain was found support statement by Fletcher and Fletcher (2003) and Liu and Xiao (2020) whom mentioned maintenance of water fountains affected satisfaction. Nonetheless, maintenance of retaining wall and fence is also noteworthy in overall satisfaction as maintenance of these wall or fences may boost confident of user towards perception on safety and hence increased their overall satisfaction and willing to make subsequent visit.

#### **4.2.2.4 Children Playground and Public Park Performance**

The maintenance of children playground exhibited a substantial relationship towards performance of public park. As illustrated in Table 4.7, the experience of children playground is significant to overall satisfaction with  $p$ -value at  $p < 0.05$  and Spearman Rho ( $r$ -value) at 0.252, whereby, the returning visit is also significant with  $p$ -value at 0.000 and Spearman Rho at 0.0105. The result confirmed statement made by Liu and Xiao (2020) mentioning experience of public facilities include playground are also closely correlated with people's

perception. Children safety is the main concern that affects the user experience. San Jose (2014) and Kurzi and Schroth (2018) mentioned that to prevent playground injury, maintenance of playground equipment is imperative. Children playground injury can be deadly caused by loosen or broken part of play equipment. When the playground is deemed dangerous to user, dissatisfaction will occur and parents will not bring their children to visit the children playground.

#### **4.2.2.5 Water Activity Facilities and Public Park Performance**

According to the correlation analysis result shown in Table 4.7, water activity facilities significantly correlated to overall satisfaction with p-value at  $p < 0.05$  and statistical dependence at 0.190. This indicated public park users are satisfied when water activity facilities are maintained well. For returning visit, the p-value projected at 0.025 which is less than 0.05 and statistical dependence projected at 0.055. This pointed out that the maintenance is significant to give a good experience to park user and hence making returning visit. This result supported findings by Romão et al. (2014) that the adequate maintenance of water activity facilities given adequate experience to user and hence secures the user satisfaction and they tend to repeat trip for the same facilities.

#### **4.2.2.6 Track or Path and Public Park Performance**

Based on Table 4.7, it is found that the perception towards track or path is momentarily correlated to public park performance. The maintenance of track or path is significant to public park overall satisfaction with its strength of relationship indicated at 0.312 with p-value at  $p < 0.05$  and successfully attract revisit intention with its strength of relationship indicated at 0.146 with p-value at  $p < 0.05$ . The result supported statement by Azenan et al.

(2021) mentioning that condition of walkway affected the satisfaction. It is crucial that the condition of track or path is conducive for the park user to carry activities such as jogging, walking, running, or cycling. Broken track or path may threaten the safety of user and hence maintenance of this facilities are indispensable (Kurzi & Schroth, 2018). When track or path is well-maintained, it provides a safe environment for the user, encourage their return visit and enhances on overall satisfaction.

#### **4.2.2.7 Outdoor Gym Facilities and Public Park Performance**

The Spearman's rank correlation coefficient as shown in Table 4.7 reveals notable correlation between the experience of outdoor gym facilities and public park performance. The maintenance of outdoor gym facilities is significant with overall satisfaction and willingness to revisit to the park for the same facilities. The variable outdoor gym facilities associated with overall satisfaction and willingness to revisit with r-value at 0.208 and 0.146 respectively. The p-value of both park performance variables had p-value at  $p < 0.05$ . The result supported the statement by Chow (2013) mentioning maintenance of outdoor gym facilities intertwined with their experience. Regular maintenance of outdoor gym facilities is imperative to ensure its user safety (Chow, 2013). Discontentment will happen when there is absence of replacement of the worn-out exercise equipment (Malek & Mariapan, 2009). Outdoor facilities are alternative form of exercise equipment that encourage physical activity. Therefore, to ensure consistency of public park performance, regular maintenance of outdoor gym facilities is required.



#### **4.2.2.8 Recreational Facilities and Public Park Performance**

According to Table 4.7, it is uncovered that the experience of recreational facilities significantly correlated to public park user general satisfaction. The overall satisfaction indicated at a correlation coefficient at 0.231 and p-value at  $p < 0.05$ . This revealed that the maintenance of recreation facilities noteworthy to the overall user satisfaction. The result supported Fletcher and Fletcher (2003) whom stated maintenance of recreation facilities affected the user satisfaction. Despite however, the correlation coefficient of recreational facilities and willingness to revisit indicated at 0.231 where its p-value indicated at  $p > 0.05$ . This signified that the maintenance of recreational facilities is found unconnected to willingness to revisit. The maintenance of bicycle or horse ridings facilities may be crucial when the service is provided to satisfy the user recreational need as maintenance of the related equipment may ensure the user safety. However, the maintenance of these recreational facilities does not necessary bring revisit which may due to user differ in recreational option.

#### **4.2.2.9 Outdoor Sport Facilities and Public Park Performance**

The Spearman's rank correlation coefficient as shown in Table 4.7 reveals that the association between outdoor sport facilities between overall satisfaction and willingness to revisit were at 0.198 and 0.086 respectively. Both performance variables had p-value of  $p < 0.05$ . This shows that the maintenance of outdoor sport facility includes but not limited to football, basketball, volleyball, tennis court and others. were found significant to park user overall satisfaction and willingness to revisit. The result supported Liu and Xiao (2020) whom stated that maintenance of sports field is noteworthy to user satisfaction. The type of sports field determines its maintenance. For instance, basketball court which greatly used by many Malaysian (Anuar & Muhamadan, 2018), the maintenance may involve reline marking

or hoop replacement and others. In the event that the sport facilities equipment is not maintained well, discontent will increase and users will become less likely to return since they cannot meet their recreational needs.

#### **4.2.2.10 Indoor Sports Facilities and Public Park Performance**

Based on Table 4.7, the Spearman's rank correlation coefficient brought to light that the significance on experience towards indoor sports facilities include but not limited to badminton, futsal, table tennis and others. were different in terms of its overall satisfaction and revisit intention. It is found that the experience of these indoor sports facilities is significant with overall satisfaction with r-value at 0.159 and p-value at  $p < 0.05$ . Despite however, the willingness to return for visitation for these facilities were not affected by its maintenance as the p-value indicated more than  $p > 0.05$  which indicate that maintenance of indoor sports facilities in insignificant to returning visit. Similar to outdoor sports facilities, maintenance of indoor sports facilities subjected type of indoor sports facilities. Despite however, in this research, public park user may not be keen into indoor sports facilities in public park. Therefore, even if the indoor facilities are well-maintained, it still cannot draw the user back.

#### **4.2.2.11 Park Furniture and Public Park Performance**

Depicted from Table 4.7, experience of park furniture is found imperative to public park performance. The maintenance of park furniture is significant to both overall satisfaction and brings out revisit intention with p-value at  $p < 0.05$  and Spearman Rho projected at 0.293 and 0.103 respectively. Park furniture include but not limited to benches, gazebo and others. are essential in supports the user recreation activities. The result support that statement by Kurzi

and Schroth (2018) mentioning that maintenance of park furniture affected the perception of public park user. Park user may require benches or gazebo for resting or social interaction. A broken benches or gazebo obstruct the use of the facilities and hence creates dissatisfaction and hinder revisit intention.

#### **4.2.2.12 Picnic/Camping area and Public Park Performance**

The Spearman's rank correlation coefficient obtained from SPSS depicted in Table 4.7 indicated that the experience transmitted from picnic or camping to area are significant to both public park performances. The experience in picnic or camping area is significant to overall satisfaction and willingness in returning visit as these recreational areas has  $p$ -value of  $p < 0.05$  and its strength correlated at 0.237 and 0.102 respectively. Thus, this revealed that maintenance of facilities within recreational areas are crucial to support the user recreational needs. The result of this particular facilities has further support statement by Fletcher and Fletcher (2003), mentioning upkeep of facilities such as picnic table is significant to user experience. Conversely in terms of camping area, Jo et al. (2005) stated that the maintenance in terms repair and replacement of camp facilities is crucial to the camper well-being. A well-maintained picnic or camping area able to addressed the need of picnicker and camper which will result in positive overall satisfaction and keen for their next visit.

#### **4.2.2.13 Washroom and Public Park Performance**

Washroom is undeniably an important facility that is consider the basic need of human. Based on the Spearman's rank correlation coefficient from Table 4.7 acquired from SPSS, both  $p$ -values of performance indicators below  $p < 0.05$  and  $r$ -value of 0.265 for overall satisfaction and 0.074 for willingness to take return visit. This proved that the maintenance experience

of washroom is significant with overall satisfaction and affect the decision on willingness to revisit. The result has also confirmed another statement produced by Maniruzzaman et al. (2021) which denoted that washroom maintenance would affect the park user experience. Cleanliness of washroom significant with visitor satisfaction (Fletcher & Fletcher, 2003). The cleanliness and maintenance of toilet is momentous to visitor satisfaction (Atsari et al., 2018). As a result, when washroom is maintained well, users' basics needs is attended well which it will bring positive user experience, increase the user overall satisfaction and in return attract returning visit.

#### **4.2.2.14 Prayer Room and Public Park Performance**

Analysis from the SPSS software indicated that the prayer room is also one of the facilities that noteworthy to public park performance based on Table 4.7. The p-value of performance indicator such as overall satisfaction and willingness of revisit were at  $p < 0.05$  respectively. The correlation coefficient of overall satisfaction and willingness of revisit were projected at 0.250 and 0.084 respectively. This shows that experience of prayer room is noteworthy to the overall satisfaction and willingness to revisit. Malaysia is made up by Muslim majority country. As this study indicated that most public park user were Muslims, this signified that maintenance of prayer room is crucial in supporting religious worship. Building and water faucet were example of essential features in worship process. Hence, maintenance of these facilities is essentially required to provide and maintain a good user experience for the Muslim while visiting the park and encourage subsequent visit.

#### **4.2.2.15 Signage and Public Park Performance**

Based on the Table 4.7, the significant value for both performance indicators were at  $p < 0.05$  where the Spearman's rank correlation coefficient of overall satisfaction established at a strength of 0.278 and willingness to revisit is established at a strength at 0.110. This indicated that signage is substantial to public park performance. Similar to most of the facilities above, it is found that the maintenance experience towards signage is significant to the overall satisfaction and willingness of park user's returning visit. The result of this study supported Yaqi and Rong (2022) whom stated that experience towards signage is substantial to the recreational park user. Park signage may include directional, information, park map, and educational signs. Mohandespor and Caymaz (2019) asserts that visibility of sign is one of the criteria in user satisfaction. Weather condition may be one of the factors that discolourise park signage and hinder word visibility. Therefore, signage is required to be maintained to ensure its readability to assist park user when visits the park, addressed their needs and ultimately foster satisfaction and returning visit.

#### **4.2.2.16 Park Lighting and Public Park Performance**

The Spearman's rank analysis obtained from SPSS depicted in Table 4.7 indicated that park lighting is noteworthy to the performance of public park. Both public park performance for park lighting is significant with p-value at  $p < 0.05$ . The overall satisfaction correlated at a coefficient of 0.276 whereby the willingness of revisit correlated at a coefficient of 0.100. The experience towards illumination in the public park is significant with the park user overall satisfaction and it also affect their returning visit. Lighting maintenance in a park is important to prevent crime whilst secure user well-being (Ayala-Azcárraga et al., 2019). In Malaysia, some public parks may operate at all times. Illumination especially from dusk until

dawn were important to ensure the safety of user between these times. Therefore, to ensure the well-being and secure park user returning visit, maintenance of lighting to ensure the park is well lit at all needed time is important.

#### **4.2.2.17 Rubbish bin and Public Park Performance**

Obtained from SPSS Spearman's rank correlation coefficient analysis depicted in Table 4.7, it is discovered that the perception of rubbish bin is positively correlated to public park performance. The significant value of overall satisfaction and willingness to revisit both showed at  $p < 0.05$ . Overall satisfaction is correlated with r-value at 0.283 whereby willingness to revisit is correlated with r-value at 0.100. Thus, it is confirmed that the maintenance experience of rubbish bin is substantial to public park user overall satisfaction and their decision in returning visit. This result supported statements from Fletcher and Fletcher (2003), mentioning maintenance of rubbish bin affected user satisfaction. In order to ensure the consistency performance of park, it is necessary that rubbish bin is emptied frequently to prevent issues such as littering (Van Doesum et al., 2021). When a park is fill with litter, it may create foul smell and deter landscape visual quality and hence reduce park user satisfaction and discourage revisit intention. Therefore, maintenance of rubbish bins is required from time to time to safeguard cleanliness of the public park.

#### **4.2.2.18 Drinking Fountain and Public Park Performance**

Depicted from Table 4.7, the correlation result show that the maintenance of drinking fountain is significant towards overall satisfaction with p-value at  $p < 0.05$ , but it is however trivial in willing to revisit as p-value obtained at  $p > 0.05$ . The public park user is generally satisfied towards experience provided by drinking fountain with Spearman Rho at 0.200,

nonetheless, despite on the satisfaction, the maintenance of drinking fountain is not the facilities that fetch revisit intention. In spite of that, drinking fountain is still crucial to activities spot such as in camping area (Cordell & James, 1973; McEwen, 1986) or playground (Park et al., 2012). Drinkable water is essential in human life despite it does not lead to park-revisit in this study. Hence, it is still imperative that drinking fountains are to be maintained to support the park users' recreational activities and ensure their respective well-being.

#### **4.2.2.19 Kiosk or Vending Machine and Public Park Performance**

According to the Spearman's rank correlation coefficient from Table 4.7, the p-value of both public park performance indicators related to maintenance of kiosk or vending machines showed at  $p < 0.05$  overall satisfaction and keenness of returning visit respectively. It is validated that the perception on maintenance of kiosk or vending machine significant to public park performance. the experience of using kiosk or vending machine is significant to the park user overall satisfaction and willing to revisit. Additionally, the upkeep of kiosk or vending machines associated at the strength of 0.198 and 0.081 respectively. In order to deliver a good experience, maintenance of these facilities is essential to ensure the functionality the facilities. The result from this analysis support statement by Liu and Xiao (2020) mentioning in order to ensure the good condition of entire park, ongoing maintenance on facility such as selling counter is significant to user satisfaction. By maintaining kiosks and vending machines well, park users are able to obtain food or beverages as needed and satisfy their needs, which in turn encourages them to return.

### 4.3 Maintenance priority list

**Table 4.8: Maintenance priority list and experience of park user**

| Park Features and Facilities | Maintenance priority |      | Experience |      | Overall Satisfaction        |                       | Willingness to Revisits     |                       |
|------------------------------|----------------------|------|------------|------|-----------------------------|-----------------------|-----------------------------|-----------------------|
|                              | Rank                 | Mean | Rank       | Mean | Correlation Coefficient (r) | Significant Value (p) | Correlation Coefficient (r) | Significant Value (p) |
| Rubbish Bin                  | 1                    | 4.44 | 4          | 3.77 | .283**                      | .000                  | .100**                      | .000                  |
| Washroom                     | 2                    | 4.41 | 10         | 3.51 | .265**                      | .000                  | .074**                      | .003                  |
| Park Lighting                | 3                    | 4.38 | 6          | 3.74 | .276**                      | .000                  | .100**                      | .000                  |
| Track/Path                   | 4                    | 4.33 | 1          | 3.92 | .312**                      | .000                  | .146**                      | .000                  |
| Signage                      | 5                    | 4.28 | 8          | 3.68 | .278**                      | .000                  | .110**                      | .000                  |
| Natural Landscape            | 6                    | 4.27 | 2          | 3.90 | .293**                      | .000                  | .155**                      | .000                  |
| Park Furniture               | 7                    | 4.23 | 5          | 3.75 | .293**                      | .000                  | .103**                      | .000                  |
| Designed Landscape Softscape | 8                    | 4.18 | 3          | 3.84 | .312**                      | .000                  | .144**                      | .000                  |
| Prayer Room                  | 9                    | 4.09 | 12         | 3.45 | .250**                      | .000                  | .084**                      | .001                  |
| Designed Landscape Hardscape | 10                   | 4.04 | 7          | 3.74 | .299**                      | .000                  | .105**                      | .000                  |
| Children Playground          | 11                   | 3.91 | 9          | 3.59 | .252**                      | .000                  | .104**                      | .000                  |
| Picnic/Camping Area          | 12                   | 3.90 | 11         | 3.49 | .237**                      | .000                  | .102**                      | .000                  |
| Drinking Fountain            | 13                   | 3.84 | 19         | 3.11 | .200**                      | .000                  | <b>.042</b>                 | <b>.084</b>           |
| Kiosk/vending machine        | 14                   | 3.78 | 16         | 3.17 | .198**                      | .000                  | .081**                      | .001                  |
| Outdoor Gym Facilities       | 15                   | 3.75 | 13         | 3.40 | .208**                      | .000                  | .155**                      | .000                  |
| Recreational Facilities      | 16                   | 3.71 | 14         | 3.24 | .231**                      | .000                  | <b>.046</b>                 | <b>.061</b>           |
| Outdoor Sports Facilities    | 17                   | 3.70 | 15         | 3.23 | .198**                      | .000                  | .086**                      | .000                  |
| Indoor Sports Facilities     | 18                   | 3.56 | 17         | 3.15 | .159**                      | .000                  | <b>.047</b>                 | <b>.056</b>           |
| Water Activity Facilities    | 19                   | 3.51 | 18         | 3.14 | .190**                      | .000                  | .055*                       | .025                  |

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

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



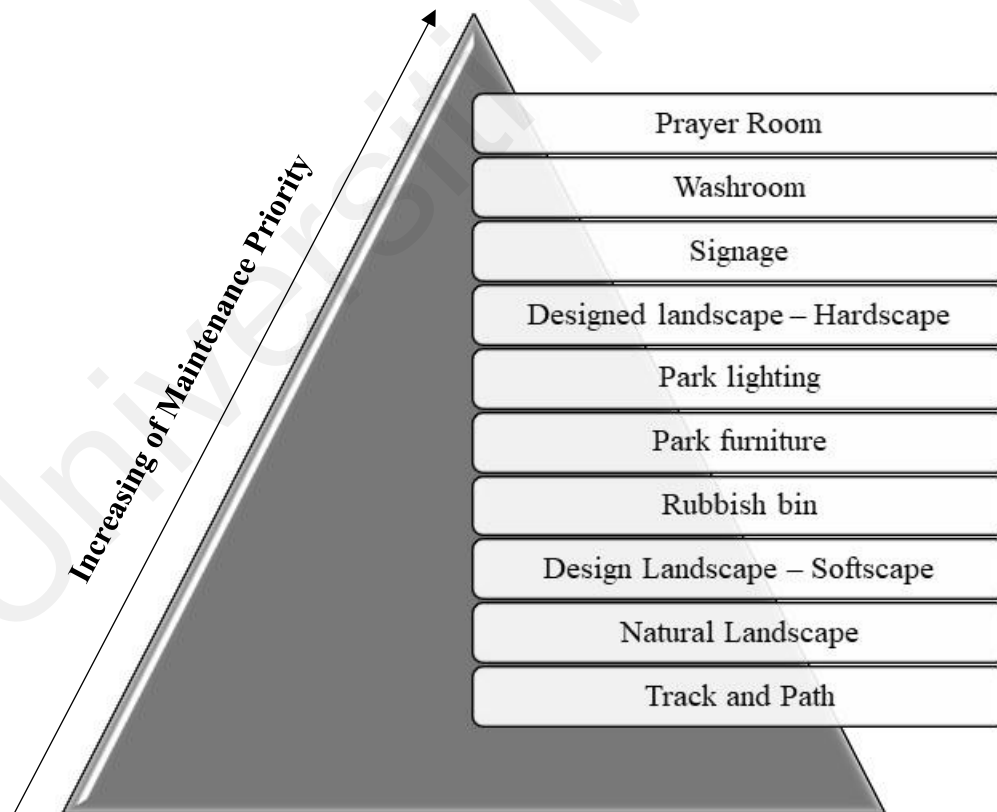
Based on Table 4.8 correlation result between towards overall performance of park, all park features and facilities were correlated to the overall satisfaction despite there were some features and facilities such as drinking fountain, recreational facilities, and indoor sports facilities did not bring returning visit. Thus, the identification of features and facilities requires maintenance can be identified based on perception of park user towards importance on provision and maintenance of features and facilities.

According to Au Yong et al. (2019) features above mean value of 4.00 are notable features concerned by the chosen stakeholder in a study. Ten (10) features and facilities have been arranged in ascending priority of maintenance Table 4.8. These are designed landscape – hardscape (mean = 4.04), prayer room (mean = 4.09), designed landscape – soft scape (mean 4.18), park furniture (mean = 4.23), natural landscape (mean = 4.27), signage (mean = 4.28), track or path (mean = 4.23), park lighting (mean = 4.38), washroom (mean = 4.41), and rubbish bin (mean 4.44). Children playground, picnic or camping area, drinking fountain, kiosk or vending machine, outdoor gym facilities, recreational facilities, and outdoor sports facilities were features that were less important in maintenance priority as the mean of importance is below 4.00 for these features and facilities.

Based on the ten (10) park features and facilities deemed notable to the park users, the experience scale generated are ranged between “Moderate” with scale 3.00 to “Good” with scale 4.00. Among the selected features and facilities, track and path has given the best user experience with mean 3.91 (ranked 1), which is closest to “Good” scale. Conversely, prayer room has given the least favourable user experience with mean 3.45 (ranked 12) which is closest to “Moderate” scale. In between, most of the features and facilities were found geared towards good user experience. For instance, washroom with mean 3.51 is found ranked at 10,

ranked 8 is signage with mean 3.68, ranked 7 is designed landscape – hardscape with mean 3.74, ranked 6 is park lighting with mean 3.74, ranked 5 is park furniture with mean 3.75, ranked 4 is rubbish bin with mean 3.77, ranked 3 is design landscape – softscape with mean 3.84, and lastly, ranked 2 were found belong to natural landscape with mean 3.90.

According to Parker and Simpson (2018), the highest priority should be given to park features that perform poorly. Therefore, maintenance shall be focus first on the upkeep of prayer room (ranked 12), followed by washroom (ranked 10), signage (ranked 8), designed landscape – hardscape (ranked 7), park lighting (ranked 6), park furniture (ranked 5), rubbish bin (ranked 4), design landscape – softscape (ranked 3), natural landscape (ranked 2), and lastly track and path (ranked 1). Figure 4.2 below depict the maintenance priority based on result obtained:



**Figure 4.2 Maintenance priority list**

#### **4.4 Semi-Structured Interview Result**

To study the quantitative result in detail, qualitative data is collected via semi structured interview to validate and substantiate the questionnaire survey outcome. Interview questions were developed based on ranking and correlation analysis acquired from quantitative result. In this regard, it can be expected that the interview results shall be matched and supported the results acquired from questionnaire survey. Additionally, in this section, responses from participant were quoted to substantiate the result. A total of thirty (30) park user whom willing to participate in the interview were coded into Respondent 1, 2, 3, ..., 28, 29, 30.

The outcomes collected are processed into two sections which are:

- (i) Comparison of interview result and ranking of prioritised provision and maintenance features and facilities
- (ii) Comparison of interview result and public park performance

##### **4.4.1 Comparison of Interview Result and Ranking of Prioritised Provision and Maintenance Features and Facilities**

The semi-structured interview outcomes are collected and compared against ranking analysis result with features and facilities above mean value of 4.00 which include Rubbish Bin (mean=4.44), Washroom (mean=4.41), Park Lighting (mean=4.38), Track or Path (mean=4.33), Signage (mean=4.28), Natural Landscape (mean=4.27), Park Furniture (mean=4.23), Designed Landscape – Softscape (4.18), Prayer Room (mean=4.09), and Designed Landscape – Hardscape (mean=4.04). It is determined that the analogy towards prioritisation on provision and maintenance were found seconded the result of ranking analysis as follow:

#### **4.4.1.1 Rubbish Bin**

Derived from the semi-structured interview, it is detected that most park attendant, nine (9) out of twelve (12) pointed that provision and maintenance of rubbish bin is very important for cleanliness of the park. People attended park may bring along food and drink to enjoy alone or with friends or family. Food and drink may come in in disposable packet therefore provision and maintenance of rubbish bin is important to keep the park free from litter as quoted from Respondent 14:

“...Rubbish bin is mandatory in a park as people bring food to eat in the park. The disposal generated required to be properly dumped to keep the park clean.”

When cleanliness of the park is ensured park user feel comfortable during their visit as quoted from Respondent 7:

“...It is important to me as provision and maintenance of rubbish bin able to prevent rubbish from scattered around. If there is littering in the park, it will contaminate the air by generating foul smell which makes me feel uncomfortable to breathe in.”

In addition, placement of rubbish bin was further raised by the respondent. Rubbish bin shall be placed in easily reached such as gathering point or along the pathway as quoted from respondent 29:

“...Rubbish bin should be not hard to find. I think rubbish bin required to be placed at gazebo and or along the pathway. Additionally, rubbish bin that is placed along the pathway shall not be too far away from a bin to next.”

#### **4.4.1.2 Washroom**

In terms of washroom, sixteen (16) respondents expressed that provision and maintenance of washroom is crucial and the most common related theme expressed by respondent was its adequacy, placement and its cleanliness. The provision of easy to access and sufficient washroom is crucial as ark people who visits park may bring along drinking water and it is inevitable that human have discharge body's waste known as excreta as quoted from Respondent 24:

“...Provision of washroom is so important to me as I drink a lot of water during exercise. In addition, if the park I attended is huge, I need washroom to be easy to reach everywhere in the park. Whilst easy to reach, having sufficient number of washroom where it located is important too.”

In addition, all park attendant shall be unrestricted to use the washroom. If washroom is not well maintained in terms of its cleanliness to secure revisitation as quoted from Respondent 25:

“...Washroom is basic to me to have in a park. A park without toilet may deter visitation and to secure park revisitation, it is important to keep the washroom clean as people who visited park may not only use for release, they may shower here before head to work.”

#### **4.4.1.3 Park Lighting**

In terms of park lighting, nine (9) respondents expressed that provision and maintenance of park lighting is crucial. Respondents retorted that provision and maintenance of lighting in the park is circulated to the safety dimension. Park that operates in the night may prone to

criminal and illegal activity which threatens the safety of park user and may create public distress, thus provision and maintenance is important to make one feel secure while visit the park when night falls as quoted from Respondent 13 and 19:

“...Although I don’t visit park in the night, but provision and maintenance of park lighting is prominent to ensure people’s safety especially to those who exercise in the park when night falls.”

#### **4.4.1.4 Tracks or Path**

In semi-structured interview, eight (8) respondents out of thirty (30) interviewed agreed that track or path is crucial to be prioritised in terms of its provision and maintenance aspects. Derived from the moderated structured interview, it is found that design and safety are the themes commonly responded together towards this facility. The cause that led to feeling of suitability and safety is subjected to the respondents. Respondent 13, 27 and 30 generally mentioned that:

“...if there is no proper track or path provided, I might find myself lost in the park and that can be terrifying and makes me feel insecure.”

In addition, the geographical gradient also supplemented as composition that connect to feeling of safety as quoted from Respondent 25 and 26:

“...It is so important to have track or path in this park. I come here for walk therefore a proper walkway is basic for me. Additionally, landscape here is a bit sloppy. If there is no proper walkway, I might fall while walking.”

Apart from design and safety theme, adequacy was pinpointed by Respondent 2 as followed:

“...Provision in terms of adequacy is so important especially for parents with baby stroller. Sufficient flat path in a park is crucial for me to stroll my baby. Imagine if path were stony my baby might end up injured.”

#### **4.4.1.5 Signage**

In terms of park signage, seven (7) respondents backed that the provision and maintenance of signage is important and it is determined the common theme respondent agreed on the provision and maintenance of this features is related to safety, cleanliness, and education. Among the discovered theme, safety has the most resonance. Considering that parks are open to everyone, it is not unusual to see first-time visitor or frequent visitor, thus, directional sign is pointed out crucial to be provided and maintained as quoted from Respondent 6 and 23:

“...I think provision and maintenance of directional sign is so important to me as I am new to this park, there is some directional sign in the park however it is insufficient and some sign the word has faded. I feel insecure now as I do not know where am I heading to.”

On top of directional sign, signage such as behavioural sign and education sign were crucial in keeping the park clean and provide education to people respectively. To keep the park clean, provision and maintenance of park sign such as “Do Not Litter” may help to reduce unwanted littering habit as quoted by Respondent 20. On the other hand, park may contain special species of flora and fauna which beneficial for visitor with children to educate their child as quoted by Respondent 30.

“...I think provision and maintenance of “Do Not Litter” sign is important to ensure the cleanliness of the park since our civility is not as ideal as it seems to be. Besides, there the sign wording also required to be clear to read.” (Respondent 20)

“...I think it is important to have and maintain education sign in the park. People bring their kids here and I even sometimes bring along my overseas friend. I certainly appreciate the chance to introduce my friend special flora and fauna in the park.” (Respondent 30)

#### **4.4.1.6 Natural Landscape**

Derived from ranking analysis result on perception towards prioritisation of provision and maintenance of natural landscape which is one of the prominent features that is important to the park user. The interviewer queried on the underlying reason on why natural landscape important to the recreational user. Among thirty (30) participants, nine (9) participants backed on prioritisation of provision and maintenance this feature. Natural landscape identified in this research include but not limited to hill, lake, stream, river, pond and others. Generally, two main dimensions emerged: feeling and aesthetic. Among the available natural landscape present in the park, subjected to individual perception, the provision and maintenance of natural landscape was found gave respondent a specific or mixed of self-contained phenomenal experiences. For instances, Respondent 7 mentioned that:

“...having of natural landscape in the park make me feel calm, relax, and refresh.”

Among all natural landscapes available in attended park, water related features such as lake or pond were most common natural features pin pointed by respondent as important to be provided and maintained in a park.



“...water element like the lake is so important to me, listening to the splashing sound of water allow me to relax.” (Respondent 25)

“...pond is important as it let me feel relax meantime beautify the park.”  
(Respondent 26)

In addition, water-related features enriched with aquatic animals serve as value-added elements that enhance user enjoyment and contribute to a more joyful park experience, as quoted from Respondent 24:

“...Lake is important to me. I bring my kids here and kids love to watch the fishes in the pond and they are happy seeing it.”

#### **4.4.1.7 Park Furniture**

In terms of park furniture, this research covered fixtures such as gazebo, benches or seat, and table. Based on semi-structured interview data collected, a total of seventeen (17) respondents supported the importance on provision and maintenance of park furniture. Among the responses, adequacy and comfortability are aspects found commonly related to this feature. Among the stipulated fixtures, gazebo is one of the fixtures collectively pointed as most important to be provided and maintained in a park. Subject to size of a park, gazebo is crucial to help park user shade away from undesired weather and park size also relate to gazebo provision in terms of adequacy. As quoted from Respondent 4 and 9:

“...Provision and maintenance of gazebo is so important to me as it allow me to shelter away from sudden rain and I wish the park can provide sufficient gazebo as this park I came to visit is so large in area.”

Subsequently, table and seat were fixtures that were commonly mentioned under park furniture which are important to the park user in terms of its provision and maintenance. Table and chairs play a vital role in support individual activities quoted from as quoted from Respondent 19, 25 and 30:

“...Seating and table were important to me. I like to sit and relax in the park.”  
(Respondent 19)

“...Seats and table were important to me provided and maintained so that I could rest after workout.” (Respondent 25)

“...I think provision and maintenance of benches is important to me as I love sit and watch the park view. It makes me feel relax.” (Respondent 30)

Besides, table and seat also helped promote social activities among people as quoted from Respondent 26 & 27:

“...As I’m a teacher, I often bring my students to park for picnic, hence tables and seats are important to be provided and maintained well for me and my students to mingle with each other.” (Respondent 26)

“...I often come to park with my friends to sit, chat and eat. Hence tables and seat were important to us. Sometimes I saw people organize birthday party in the park, so table and seating are important to promote socialization among friends and family.”  
(Respondent 30)

In addition, there is respondent that asserts that provision and maintenance of table, seats, and gazebo were crucial as per mentioned by Respondent 14:

“...Park furniture like seats and tables are must have while gathering with my family. Seats particularly important when I visit the park alone as it allows me, a senior citizen to rest when tired of walking. Besides, having seats and table which is well maintained inside a gazebo is very much appreciated in shading me away from hot weather.”

#### **4.4.1.8 Designed Landscape – Softscape**

Designed landscape encompass soft scape and hardscape in this study were both essential in the ranking analysis from the perspective of park user towards prioritisation in provision and maintenance of park features. Soft scape comprised of plant bed, mown grass, tree, shrubs, flower and others. Ranking analysis generated that soft scape ranked as more important than hardscape. In semi-structured interview, out of thirty (30) respondents interviewed, fourteen (14) agreed that soft scape is important to be prioritised in terms of provision and maintenance aspects.

Derived from the interview, in ascending order, shrub, lawn, tree, and flower bed were softscapes that is meaningful to be prioritised in provision and maintenance in the park. In most parks, users pointed out more than one softscape at one time, whereby these softscapes provided comfort to them and beautified the park. The following were several responses that support the dimensions.

“...flower bed and lawn were important to be provided and maintained as many people came to this park for a walk. It is a beautiful attraction.” (Respondent 14)

“...it is so important to have trees and flowers in the park and these features help me to release tension.” (Respondent 22)

“...I think having tree in the park is crucial for shade and I felt relax and peace watching these green. Besides having of flower bed and shrubs are important to make the park more liveable and relaxing.” (Respondent 30)

Some respondent also pointed that having sufficient of softscape provided is crucial to them, as quoted by the following respondent:

“...I often visited two public parks (Metropolitan Kepong Park and Titiwangsa Lake Garden) and I noticed that Taman Metropolitan Kepong do not have sufficient plant bed compared to Titiwangsa Lake Garden. In my opinion, sufficient plant bed needed to be provided for the beauty of the park.” (Respondent 2)

“...there are times when this park (Taman Metropolitan Kepong) is too hot, so it makes me feel this park has few trees.” (Respondent 3)

Furthermore, respondent also pointed that softscape support education and encouraged social media posting as quoted by respondent 24 and 25 in the following respectively:

“...flower and trees helped relax my eyes and makes me feel refreshing, my kids too love to ask the species of flowers and trees available in the park and I educate them by this way.” (Respondent 24)

“...trees, flowers bed, lawn makes me feel relax, happy and it created a beautiful landscape that encouraged me to do social media posting.” (Respondent 25)

#### **4.4.1.9 Prayer Room**

In terms of prayer room facility, seven (7) respondents seconded that in order to facilitate five (5) prayer time, it is important to provide and maintain prayer room in a park. It is important that user could easily access to prayer room within a park. Having prayer room in a park may facilitate Muslim community to pray whilst exercising in the park instead of travelling to look for nearest surau as quoted from Respondent 2:

“...Prayer room is so important for us as Muslim. I’ve been to a park with no prayer room within. Although I found one next to the park, however, subject to the entrance where I park my car, it can be very far to walk.” (Respondent 2)

#### **4.4.1.10 Designed Landscape - Hardscape**

Hardscape in this research include but not limited to water fountain, retaining wall, and fencing. In semi-structured interview, fifteen (15) out of thirty (30) respondents agreed that hardscape is important to be prioritised in terms of provision and maintenance aspects. Among the stipulated features it is found that water fountain raised most of the park goer attention followed by fencing or wall. Most of the dimension found related to water fountain surfaced are related to aesthetic and attraction, for instance, as quoted from respondent 22 and 26:

“...I think hardscape like water fountain is important to be provided and maintained as it further beautifies the park.” (Respondent 22)

“...To me water fountain is not important. But my students were always amazed by that. So, I think water fountain certainly attracts my students’ attention.” (Respondent 26)

Besides, it is found that a number of respondents pointed on theme such as adequacy, social media, cleanliness and comfort. Following are quotes from respondents:

“...I think the provision water fountain is important in terms of the adequacy as children loves water fountain very much, and its maintenance of this feature is so important to ensure children constantly have fountain to watch on” (Respondent 2)

“...Having water fountain provided and maintained is important besides to attract people, meantime it allows us to take photo and post to Instagram.” (Respondent 6)

“...In my opinion, having water fountain in the lake is important not only for the aquatic life but also to keep the lake clean.” (Respondent 20)

“...I like having water fountain in the park. The sound of water splashing makes me feel relax.” (Respondent 30)

In terms of fence or wall, despite ranking analysis resulted it is important to provide and maintain this feature, however, some park goers felt that fence is inconvenient and make them feel grounded as quoted from respondent 18, 19 & 30:

“...I think fence is unnecessary in public park because it hinder me when I come in. I have to walk to find entrance which is a bit inconvenience to me.” (Respondent 19)

“...To me, I dislike fence. It makes me feel my freedom has been limited. Like grounded in a space.” (Respondent 18 and 30)

In addition, some respondents deemed that provision and maintenance of fence or wall is primary and some respondents deemed that it is non-primary to them, however, both groups opined that it is important for the safety of the people as quoted following:

“...To me hardscape like wall is not important. But maybe it is important to parents with children as children may run here and there.” (Respondent 21)

“...I think it is important to have fence surround the park. This is to prevent children running into the road.” (Respondent 25 and 27)

The following Table 4.9 summarised dimension identified from semi-structured interview:

**Table 4.9: Summary of identified dimension from comparison of interview result and ranking of prioritised provision and maintenance features and facilities**

| No | Features and Facilities        | Dimension Provision and Maintenance Dimension from Interview |         |        |                            |           |                    |         |             |               |                      |           | New dimension                            |           |                                     |            |
|----|--------------------------------|--------------------------------------------------------------|---------|--------|----------------------------|-----------|--------------------|---------|-------------|---------------|----------------------|-----------|------------------------------------------|-----------|-------------------------------------|------------|
|    |                                | Adequacy                                                     | Density | Design | Feeling (Comfort, healthy) | Placement | Provision - Safety | Species | Cleanliness | Functionality | Maintenance - Safety | Aesthetic | Feeling (inconvenient, limit of freedom) | Education | Social (Interaction, media posting) | Attraction |
| 1. | Rubbish Bin                    |                                                              |         |        | ✓                          | ✓         |                    |         | ✓           |               |                      |           |                                          |           |                                     |            |
| 2. | Washroom                       | ✓                                                            |         |        |                            | ✓         |                    |         | ✓           |               |                      |           |                                          |           |                                     |            |
| 3. | Park Lighting                  |                                                              |         |        |                            |           |                    |         |             |               | ✓                    |           |                                          |           |                                     |            |
| 4. | Tracks or path                 | ✓                                                            |         | ✓      |                            |           |                    |         |             |               | ✓                    |           |                                          |           |                                     |            |
| 5. | Signage                        |                                                              |         |        |                            |           |                    |         | ✓           |               | ✓                    |           |                                          | ✓         |                                     |            |
| 6. | Natural Landscape              |                                                              |         |        | ✓                          |           |                    |         |             |               |                      | ✓         |                                          |           |                                     |            |
| 7. | Park Furniture                 | ✓                                                            |         |        | ✓                          |           |                    |         |             |               |                      |           |                                          |           |                                     |            |
| 8. | Designed Landscape – Softscape | ✓                                                            |         |        | ✓                          |           |                    |         |             |               |                      | ✓         |                                          | ✓         | ✓                                   | ✓          |



Table 4.9, continued

| No. | Features and Facilities        | Dimension Provision and Maintenance Dimension from Interview |         |        |                            |           |                    |         |             |               |                      |           | New dimension                            |           |                                     |            |
|-----|--------------------------------|--------------------------------------------------------------|---------|--------|----------------------------|-----------|--------------------|---------|-------------|---------------|----------------------|-----------|------------------------------------------|-----------|-------------------------------------|------------|
|     |                                | Adequacy                                                     | Density | Design | Feeling (Comfort, healthy) | Placement | Provision - Safety | Species | Cleanliness | Functionality | Maintenance - Safety | Aesthetic | Feeling (inconvenient, limit of freedom) | Education | Social (Interaction, media posting) | Attraction |
| 9.  | Prayer Room                    |                                                              |         |        |                            | ✓         |                    |         |             |               |                      |           |                                          |           |                                     |            |
| 10. | Designed Landscape – Hardscape |                                                              |         |        | ✓                          |           |                    |         | ✓           |               | ✓                    | ✓         | ✓                                        |           | ✓                                   | ✓          |

Compared to summary of provision dimension identified from literature review, it is detected that provision and maintenance of adequate softscape are dimension that should be prioritised in provision and maintenance of public park. Besides, the provision and maintenance of rubbish bin, natural landscape, park furniture, softscape are found to be essential for the feeling of comfort healthy for the park user. On top of that, clean signage and hardscape also found to be an added dimension that important to park user. Apart from that, maintenance of signage is also an added dimension concern by the public park user.

Furthermore, four new dimensions were also found needed to be prioritised in provision and maintenance aspect. For instance, provision and maintenance of signage ease educational benefits, provision and maintenance of softscape offer educational benefits, encourage social media posting, and serve as an attraction for park user to attend the park. Lastly, a new dimension has been identified concerning hardscape, as its provision and maintenance facilitate social interaction and serve as an attraction. However, it also tends to evoke negative feelings among park users, as it may create inconvenience and restrict their sense of freedom within the park.

#### **4.4.2 Comparison of Interview Result and Public Park Performance**

Overall, semi-structured interview outcomes collected are compared against result attained from correlation analysis. Similar to comparison of interview result and ranking analysis, the analogy of interview result and public park performance seconded the public park performance

#### **4.4.2.1 Influence of Natural Landscape to Public Park Performance**

Derived from correlation analysis result, natural landscape that encompass features such as mountains, hills, lake and others. were significantly correlated to public park performance. Therefore, interview questions were prepared to obtain in depth information towards condition of natural landscape. Among thirty (30) respondents, all respondents agreed that the condition of natural landscape influence public park performance. In general, a good-quality natural landscape should always be kept clean so that it can remain attractive. In this way, park visitors will have a positive experience. The following quotes from respondents demonstrate the significance of natural landscape to public park performance:

“...A poor condition lake makes me feel uneasy when passed by. Rubbish captured on the water tend to create foul odour which sicked me. Therefore, I need a clean lake or otherwise I see no point in its provision and maintenance.” (Respondent 27)

“...A poor condition lake will deteriorate the park aesthetic quality. Organism such as algae occasionally grow on the water surface makes me feel very uncomfortable as this project to me that the water is dirty. I did like to enjoy a watching over clean water.” (Respondent 10)

#### **4.4.2.2 Influence of Designed Landscape - Softscape to Public Park Performance**

Softscape comprised of plant bed, mown grass, tree, shrubs, flower and others. Derived from correlational analysis, softscape is significant to public park performance. Among thirty (30) respondents, all respondents agreed that the condition of designed landscape – softscape influence the public park performance.

Result of interview identified that condition of plant is crucial to ensure the safety of park user and aesthetic of the park. Plant such as tree played a role in providing shades and beautify the park. A poor condition plant may pose threat to the park user which will reduce the visitor enjoyment while visits the park. Public parks perform better when softscape being provided and maintained well, as evidenced by the following quotes from respondents:

“...Condition of trees especially trees that planted along pathway is so important to me. Poorly maintained tree may have dangling branches which definitely makes me feel anxious from getting hit by fallen branches when I pass by. Tree maintenance is so important to ensure the safety of all.” (Respondent 3)

“...The luxuriant of plant especially trees impacted me. I did like to see on healthy growing tree as it makes me feel relax. Hence tree maintenance such as routine fertilising the plants is important to ensure the park look beautiful.” (Respondent 19)

#### **4.4.2.3 Influence of Designed Landscape - Hardscape to Public Park Performance**

Hardscape in this research include but not limited to water fountain, retaining wall, and fencing. Correlational analysis indicated that hardscape is one of the features that significant to public park performance. Among thirty (30) respondents, all respondents agreed that the provision and maintenance of designed landscape – hardscape influence the public park performance.

The interview result collected indicate that a good condition of this feature ensured park aesthetic quality and safety as indicated by the following quotes, hardscape plays an important role in the performance of public parks:

“...I appreciate hardscape such as water fountain. However, water fountain that do not jet water makes the park look dull and unlively. Thus, maintenance of water fountain is important to make sure the park look beautiful.” (Respondent 9)

“...Hardscape like fence is important as there are children in the park. If fences are not maintained well, they might run out beyond park area which poses safety concern such as hitting by car.” (Respondent 25)

#### **4.4.2.4 Influence of Children Playground to Public Park Performance**

For children playground, eleven (11) respondents were able to seconded the significance of relationship. Children playground is essential in health and development of children’s motor skill. Based on interview data collected, safety of children playground is commonly concerned by the park goer as quoted by the following respondent:

“...Loosen screw or loss of plasticizer of play facilities poses hidden threat to children as they might injured by the degraded part and maintenance is needed to keep the children safe.” (Respondent 25)

“...The children slide is partly made up of wood and there are mosses grow on that. Due to its slippery surface, children sometimes fell down stepping on that. Therefore, Maintenance to remove the mosses occasionally is definitely required.” (Respondent 24)

“...The monkey bars are rusted. This poses threat to children when they grab on it. Children might suffer from tetanus if cut by rusted metal. Authority needed to check and replace a new one otherwise there will be repercussion.” (Respondent 30)

#### **4.4.2.5 Influence of Water Activity Facility to Public Park Performance**

For water activity facilities, two (2) of them were able to supported the significance of relationship. Based on interview data collected, functionality and safety of water activity facilities is commonly concerned by the park goer as quoted by the following respondent:

“...I’m satisfied with the condition of kayak in this park. Despite plasticizer occurred to some kayak, however, maintenance has been conducted to repair the damaged part. Nonetheless, ongoing maintenance is crucial otherwise drowning may happen.” (Respondent 15)

#### **4.4.2.6 Influence of Tracks and Path to Public Park Performance**

In the interview session, the interviewer was concerned about significant of relationship between the provision and maintenance of features and facilities and public park performance. In the aspect of track and path, among thirty (30) respondents, eight (8) of them were able to confirm the significance of relationship. Track or path is one of the features that available in all parks. Based on interview data collected, safety of track or path are concerned by the park goer as quoted by the following respondent:

“...I push baby stroller to park, thus path to me must be even as some of the paths are lifted by growing tree root. Besides, path also needed to be free from potholes. Maintenance is crucial otherwise me and my baby might trip and injure.” (Respondent 2)

“...Occasionally, fallen leaves covered the paths, and they become slippery after rain. Several times I almost fell down injure myself. Thus, cleaning up of fallen leaves promptly is important to ensure safety of user.” (Respondent 25)

#### **4.4.2.7 Influence of Outdoor Gym Facilities to Public Park Performance**

Followed by outdoor gym facilities, five (5) of them were able to confirm the significance of relationship. Based on interview data collected, functionality and safety of outdoor gym facilities is commonly concerned by the park goer as quoted by the following respondent:

“...This facility often disjoint and plasticizer happen which hinder the access as I’m worried that I might injured myself using this facility. Therefore, maintenance of this facility is required to ensure the user safety.” (Respondent 10)

“...Rusting of grab handle is the issue. I am unable to use the facility which makes me upset every time I sees it. I think maintenance is needed to replace the rusted part otherwise I probably will not visit anymore.” (Respondent 30)

#### **4.4.2.8 Influence of Recreational Facilities to Public Park Performance**

Subsequently for recreational facilities such as horse riding or bicycle renting, **three (3)** of them were able to confirm the significance of relationship. Based on interview data collected, functionality of these facilities is commonly concerned by the park goer as quoted by the following respondent:

“...I came to park for cycling. Presently I think the condition of bicycle is being maintained well. Chain is lubricated, tyres were pumped up, and pedals were fine.

However, on-going upkeep of bicycle is obligated to ensure the facility is operative.”

(Respondent 14)

#### **4.4.2.9 Influence of Outdoor Sport Facilities to Public Park Performance**

In the aspect of outdoor sports facilities, a total of six (6) of them were able to confirm the significance of relationship. Based on interview data collected, functionality and safety of outdoor sports facilities is commonly concerned by the park goer as quoted by the following respondent:

“...The condition of basketball court is generally acceptable. Usually, damages include netting of basketball hoop and faded court lines. Although it did not badly affect me, but if maintenance on these damages were made, I did be happy in every visit.” (Respondent 13)

“...I came to park to play badminton and the court I attended is cemented floor with several potholes and cracks. Few times I injured myself stepping on it. Maintenance is definitely needed to prevent more injuries.” (Respondent 21)

#### **4.4.2.10 Influence of Indoor Sport Facilities to Public Park Performance**

In the aspect of indoor sports facilities, a total of four (4) of them were able to confirm the significance of relationship. Based on interview data collected, functionality of outdoor sports facilities is commonly concerned by the park goer as quoted by the following respondent:

“Overall, the condition of badminton court is acceptable. Sometimes there is spoiled light above but does not affect the game. However, maintenance to replace the light is appreciated so I feel energetic while playing.” (Respondent 28)



#### **4.4.2.11 Influence of Park Furniture to Public Park Performance**

For park furniture, ten (10) respondents provide meaningful information on significance of park furniture and performance. Park furniture is provided in the park allowing people to sit and chat comfortably. Interview data collected emphasized towards condition of gazebo and seat circulate around functionality. The following quote were collected from the respondents:

“...The roof of gazebo roof is leaking which is less satisfying. A broken gazebo has no function to shade me away from the rain. Hence its maintenance is important to prevent us wet by the rain standing under the roof. (Respondent 9)

“...Benches were made of wood in this park and many has degraded. My friend and I could not sit on it. A good condition of these benches is so important so that I can socialize with my friends.” (Respondent 27)

#### **4.4.2.12 Influence of Picnic and Camping Area to Public Park Performance**

For picnic and camping area, nine (9) respondents were able to supported the significance of relationship. Based on interview data collected, functionality and cleanliness of picnic and camping area is commonly concerned by the park goer as quoted by the following respondent:

“...Littering is the issue as people gathered here which creates trash. Sometimes trash bin will be overturned by monkeys making the park look filthy. Therefore, frequent cleaning is needed in these areas.” (Respondent 13)

“...Barbeque stove, seating, table and others. is often found malfunction which interrupt my excitement while wanting to do picnic with my friends. Malfunction due

to missing grill, broken seats or table. Thus, maintenance is essential that things provided serve people's need." (Respondent 27)

#### **4.4.2.13 Influence of Washroom to Public Park Performance**

In the aspect of washroom, nine (9) respondents provide related information on significance of washroom and public park performance. Washroom is a basic amenity that facilitate recreational activities of park user. The common theme that circulated around its maintenance condition is cleanliness. Following quote were collected from the respondents:

"...A clean condition washroom is what I'm looking forward so that I feel comfortable when using it." (Respondent 1)

"...I like washroom to be smell free, and everything inside such basin, light, door and others. to be usable. Maintenance is important to ensure the functionality. I will feel agitated when this facility is malfunction." (Respondent 29)

#### **4.4.2.14 Influence of Prayer Room to Public Park Performance**

Followed by prayer room, only one (1) respondent provide information on significance of prayer room and performance. Based on interview data collected, respondent 17 expressed that:

"...Although I do not use the prayer room, however, it is important to keep the room clean such as a vacuumed carpet and carpet washes with fabric softener so that people feel comfortable during the prayer." (Respondent 17)

#### **4.4.2.15 Influence of Signage to Public Park Performance**

In the aspect of signage, five (5) respondents provide useful information on significance of signage and public park performance. Signage is crucial in providing direction, information, and education to park user. Interview data indicate an emphasis towards condition of directional signage largely focus on safety. The following quote were collected from the respondents:

“...Signage wording has faded. I’m familiar to his park however for first timer, they will find lost in this park and feel scare. Therefore, word signage needs to be readable. Maintenance is needed to ensure the security of the user.” (Respondent 10)

#### **4.4.2.16 Influence of Park Lighting to Public Park Performance**

Subsequently, five (5) respondents postulate related information on significance of lighting and public park performance. Generally, lighting provide sense of security to the visitor who attend to park during dark hours. The common theme that circulated around its maintenance condition is safety. Following quote were collected from the respondents:

“...I do not come to the park when night falls, but I think it is important that lighting is being maintained well to avoid criminal cases from happen.” (Respondent 28)

“...I only come to park in the morning. However, maintenance of lighting is very important to ensure user safety as park open until night.” (Respondent 27)

#### **4.4.2.17 Influence of Rubbish Bin to Public Park Performance**

For rubbish bin, among thirty (30) contributors, seven (7) provided related information that supported the significance. The presence of human in public park sometimes creates garbage. Thus, rubbish bin is essential in collect the waste and reduce pollution to the park. The conversation with interviewees is quoted as follow:

“...Rubbish bin here always over filled and rubbish found scattered around. It disgusted me and made me reduced my visit. Maintenance of rubbish bin is so important to keep the park clean.” (Respondent 7)

“...This park does not really have rubbish bin. However, the fixed schedule of rubbish collection is important to keep the park clean.” (Respondent 29)

#### **4.4.2.18 Influence of Drinking Fountain to Public Park Performance**

In the aspect of drinking fountain, seven (7) respondents supported significance of drinking fountain to public park performance. Water is a basic living need that supports human life. The common theme that circulated are functionality and safety as per quoted from respondent 29 & 30:

“...I bring water bottle to the park during exercise. Drinking fountain is important for me to refill the water. If maintenance is not ideal, I may have not enough water to sustain the amount of my exercise which make me feel uncomfortable.” (Respondent 29)

“...I do not bring water bottle to park so I drink water from the drinking fountain. If condition of drinking fountain is bad, I could get sick by drinking it. Hence,

maintenance of the drinking fountain is very important to ensure user safety.”  
(Respondent 30)

#### 4.4.2.19 Influence of Kiosk to Public Park Performance

Lastly, for kiosk or vending machine, two (2) respondents supported the noteworthy of this feature towards public park performance. Park goer whom conduct passive or active recreational activity may replenish energy before, during or after desired recreational activity. Thus, the condition of this feature is concerned on its functionality as per quoted from respondent:

“...I often feel hungry after exercise and occasionally look for an energy bar. The condition of vending machine does not reach expectation. Most of the time the access panel worn out. I think maintenance is crucial to ensure the machine works well so that my craving is satisfied.” (Respondent 12)

The following Table 4.10 summarised dimension identified from semi-structured interview:

**Table 4.10: Summary of maintenance dimension identified from comparison of interview result and public park performance**

| No. | Features and Facilities        | Maintenance Dimensions |             |               |        |
|-----|--------------------------------|------------------------|-------------|---------------|--------|
|     |                                | Aesthetic              | Cleanliness | Functionality | Safety |
| 1.  | Natural Landscape              | ✓                      | ✓           |               |        |
| 2.  | Designed Landscape – Softscape | ✓                      |             |               | ✓      |
| 3.  | Designed Landscape – Hardscape | ✓                      |             |               | ✓      |

Table 4.10, continued

| No. | Features and Facilities                            | Maintenance Dimensions |             |               |        |
|-----|----------------------------------------------------|------------------------|-------------|---------------|--------|
|     |                                                    | Aesthetic              | Cleanliness | Functionality | Safety |
| 4.  | Children Playground                                |                        |             |               | ✓      |
| 5.  | Water Activity Facility                            |                        |             | ✓             | ✓      |
| 6.  | Track or path                                      |                        |             |               | ✓      |
| 7.  | Outdoor Gym Facilities                             |                        |             | ✓             | ✓      |
| 8.  | Recreational facilities (Bicycle & Horse Riding)   |                        |             | ✓             |        |
| 9.  | Outdoor Sports Facilities                          |                        |             | ✓             | ✓      |
| 10. | Indoor Sports Facilities                           |                        |             | ✓             |        |
| 11. | Park furniture (Gazebo, Benches and others)        |                        |             | ✓             |        |
| 12. | Picnic and camping area                            |                        | ✓           | ✓             |        |
| 13. | Washroom                                           |                        | ✓           |               |        |
| 14. | Prayer Room                                        |                        | ✓           |               |        |
| 15. | Signage (map, directional, information, education) |                        |             |               | ✓      |
| 16. | Park lighting                                      |                        |             |               | ✓      |
| 17. | Rubbish bin                                        |                        | ✓           |               |        |
| 18. | Drinking fountain                                  |                        |             | ✓             | ✓      |
| 19. | Kiosk/Vending Machine                              |                        |             | ✓             |        |

Based on the dimensions identified in the literature review, no entirely new dimensions emerged from the interview findings. Instead, the interview results revealed only additional aspects within the existing identified dimensions. For instance, the maintenance of hardscape

influences user satisfaction, incorporating an additional aesthetic dimension to the overall park experience, maintenance of prayer room influences user satisfaction, incorporating cleanliness dimension, maintenance of recreational facilities and kiosk or vending machine incorporating functionality, and lastly maintenance of outdoor sports facilities and signage incorporate safety dimension.

#### **4.5 Discussion of Overall Findings**

This research adopted mix-method approach in collect, analyse and interpret data and findings. Research findings were mainly derived from questionnaire survey. Subsequently, the findings from survey were taken further to compare with interview result for validation purpose. The validation process extracted from ranking analysis and correlation analysis.

##### **4.5.1 Validation of Ranking Analysis Result**

The ranking analysis result revealed that rubbish bin, washroom, lighting, track or path, signage, natural landscape, park furniture, soft designed landscape, prayer room, hard designed landscape are user preferred features and facilities in public park. The interview result demonstrated that all thirty (30) respondents had confirmed that the provision of most features is significant to them. Only signage and hardscape design were found to have respondent whom think it is not essential to be provided in a park.

##### **4.5.2 Validation of Correlation Analysis Result**

The correlation analysis revealed that all nineteen (19) features and facilities which include Natural landscape, Designed landscape – Softscape, Designed landscape – Hardscape, Children playground, Water activity facility, Tracks and path, Outdoor gym facilities, Outdoor sports facilities, Park furniture, Picnic and camping area. Washroom. Prayer room.

Signage, Park lighting, Rubbish bin, and Kiosk or vending machine are significantly correlated to the both park performance indicator of public park. Whereas for recreational facilities, indoor sports, and drinking fountain, it significant to overall satisfaction but insignificant to revisit intention. In the interview session, generally there is/are respondent(s) agreed that they are concern on the condition of features and facilities of attended park. Subjected to the park features and facilities, respondents that acknowledge the relationship of particular features or facilities towards park performance varied.

#### **4.6 Chapter Summary**

Through literature review, out of nineteen (19) public park features and facilities identified, ten (10) features and facilities were found ranked important to be provided in a public park. Subsequently, correlation analysis was performed to test relationship between all nineteen (19) variables and public park performance variables which are overall satisfaction and willingness to revisit. It is found that all nineteen (19) variables are significant to overall satisfaction. Sixteen (16) variables were significant to willingness to revisit where three (3) variables were found insignificant to willingness to revisit.

Questionnaire survey results provided the main findings of the research. Subsequently, semi-structured interview results were analysed to validate the result of questionnaire. It is found that the result of both methods is largely in agreement. Therefore, the results are deemed trustable and reliable. The conclusion would be discussed in Chapter 5.



## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Introduction**

This chapter present conclusion of the study by putting together formulated research objectives, its findings and discussion. Subsequently, contribution to the knowledge is outlined. In addition, suggestion for future research related to provision and maintenance of public park features and facilities is proposed.

#### **5.2 Conclusion of the Study**

This study instigated by gathering of information from credible journal and reported news revealed the poor provision and maintenance of public park features and facilities in Malaysia. Features and facilities that provided in public park can be robust yet some parks are found do not provide and maintain their features and facilities in ways that serve park users' recreation intention. Therefore, this study is intended to study the perception on importance of provision and experience on maintenance of features and facilities.

In order to identify relatable park features and facilities, a thorough review of literature on user need, demand, and preferences towards park features and facilities is conducted. Through the review of literature, nineteen (19) variables are identified to be have been perceived important to user. Subsequently, a conceptual framework is constructed to reflect the framework of study which intended to be use to assess the overall performance of identified variables.

A survey questionnaire disseminated to collect perception on the provision and maintenance of public park features and facilities. Succeeding data collection via questionnaire, a semi-

structured interview is carried out on park user to investigate further on the perception of provision and maintenance of park features and facilities. The analysis results were found to be supportive and validated one another in the end.

In conclusion, ten (10) out of nineteen (19) variables are found important to be provided in a public park. Furthermore, these variables were found significant to influence the public park performance. Then a maintenance priority list is configured to appendage the current maintenance practice in order to enhance park user experience. The conclusion from the study related to research objective are as followed:

**5.2.1 Objective 1: To identify the user perception and experience on provision and condition of public park features and facilities.**

The selection of features and facilities was completed through a thorough review of literature. In the aspect of provision, it is found that ten (10) out of nineteen (19) variables deemed important to the park user. The variables are stated as follows (sorted in descending of importance):

- i. Rubbish Bin
- ii. Washroom
- iii. Lighting
- iv. Track or path
- v. Signage
- vi. Natural landscape
- vii. Park furniture
- viii. Designed landscape - Softscape
- ix. Prayer room

x. Design landscape - Hardscape

Derived from the identified ten (10) important features and facilities, in the aspect of user experience, it is found that the current user experience is less desirable as none of the variables were found given user an exceptional experience. Variables were found given park user an experience between “Moderate” to “Good”. The variables are stated as follows (sorted in descending of experience):

- i. Track and path
- ii. Natural Landscape
- iii. Designed landscape – Softscape
- iv. Rubbish bin
- v. Park furniture
- vi. Park lighting
- vii. Designed landscape – Hardscape
- viii. Signage
- ix. Washroom
- x. Prayer Room

Ten variables that are chosen as the mean score are above 4.00 which are notable features concerned by the stakeholder. The notable features and facilities were processed further to sort out its maintenance experience. As a result, features and facilities that preferred by user and maintenance quality are identified.

### 5.2.1.1 Compliance on Provision of Public Park Features and Facilities against Public Park User Preferences

Ten (10) identified features and facilities deemed important to public park user which are rubbish bin, washroom, lighting, track and path, signage, natural landscape, park furniture, designed landscape – softscape, prayer room, and design landscape – hardscape were brought forward to compare on available data presented by administered authority in provision of public park features and facilities, it is found that all categories of park does not fully match the preference of park user.

Play lot is lacking on provision of natural landscape, hardscape, tracks and path, washroom, and prayer room; play field is lack on provision of natural landscape, hardscape, tracks and path, washroom, and prayer room signage, park lighting, and rubbish bin; neighbourhood park is lack of softscape, washroom, prayer room, and signage; local park lack of natural landscape, hardscape, park furniture, washroom, prayer room, and rubbish bin; urban park lack of washroom, prayer room, and rubbish bin; regional park lack of hardscape, prayer room, signage, park lighting, and rubbish bin. A summary of table on compliance is shown in following **Table 5.1**:

**Table 5.1: Compliance on provision of public park features and facilities**

| No. | Features and Facilities        | Park Categories |            |                    |            |            |               |
|-----|--------------------------------|-----------------|------------|--------------------|------------|------------|---------------|
|     |                                | Play Lot        | Play Field | Neighbourhood Park | Local Park | Urban Park | Regional Park |
| 1.  | Natural landscape              |                 |            | √                  |            | √          | √             |
| 2.  | Designed landscape – Softscape | √               | √          |                    | √          | √          | √             |
| 3.  | Design landscape – Hardscape   |                 |            | √                  |            | √          |               |
| 4.  | Tracks and path                |                 |            | √                  | √          | √          | √             |

Table 5.1, continued

| No. | Features and Facilities | Park Categories |            |                    |            |            |               |
|-----|-------------------------|-----------------|------------|--------------------|------------|------------|---------------|
|     |                         | Play Lot        | Play Field | Neighbourhood Park | Local Park | Urban Park | Regional Park |
| 5.  | Park Furniture          | √               | √          | √                  |            | √          | √             |
| 6.  | Washroom                |                 |            |                    |            |            | √             |
| 7.  | Prayer room             |                 |            |                    |            |            |               |
| 8.  | Signage                 | √               |            |                    |            | √          |               |
| 9.  | Park lighting           | √               |            | √                  |            | √          |               |
| 10. | Rubbish bin             | √               |            | √                  |            |            |               |

Previous researcher has pointed out that there is a lack of guideline in provision of features and facilities towards Malaysian public park. Hence, it is worthwhile for administering body that manage public parks to specifically investigated the preferred features and facilities in providing respective guideline in public park provision of features and facilities.

### **5.2.2 Objective 2: To investigate the relationship between experience of park user and public park performance.**

In order to find out if all nineteen (19) features and facilities correlated to park performance, SPSS software is utilised to analyse relationship between these variables and public park performance which include overall satisfaction and willingness to revisit. According to the analysis result, it is proven that all nineteen (19) variables are significantly correlated to overall satisfaction.

Variables that are significant correlated to overall satisfaction are as follows:

- i. Natural landscape
- ii. Designed landscape – Softscape
- iii. Designed landscape – Hardscape
- iv. Children playground
- v. Water activity facility
- vi. Tracks and path
- vii. Outdoor gym facilities
- viii. Recreational facilities
- ix. Outdoor sports facilities
- x. Indoor sports facilities
- xi. Park furniture
- xii. Picnic and camping area
- xiii. Washroom
- xiv. Prayer room
- xv. Signage
- xvi. Park lighting
- xvii. Rubbish bin
- xviii. Drinking fountain
- xix. Kiosk or vending machine

Conversely for willingness to revisit, there are three (3) variables which are recreational facilities, indoor sports facilities, and drinking fountain are insignificant to willingness of revisit. Thus, variables that are significant correlated to revisit intention are as follows:

- i. Natural landscape

- ii. Designed landscape – Softscape
- iii. Designed landscape – Hardscape
- iv. Children playground
- v. Water activity facility
- vi. Tracks and path
- vii. Outdoor gym facilities
- viii. Outdoor sports facilities
- ix. Park furniture
- x. Picnic and camping area
- xi. Washroom
- xii. Prayer room
- xiii. Signage
- xiv. Park lighting
- xv. Rubbish bin
- xvi. Kiosk or vending machine

In conclusion, the maintenance quality of all features and facilities significant to overall satisfaction despite not all significant to willingness to revisit. However, it is generally crucial to reckon that there is a relationship between maintenance quality and park performance, hence, maintenance team shall take into account in formulation of the maintenance strategies to positively safeguard the park performance.

### **5.2.3 Objective 3: To propose the maintenance priority list of features and facilities to enhance effectiveness of public park management**

Derived from problem statement, several researchers have recently stressed on the escalation of maintenance cost that causes many features and facilities remain neglected, deteriorating into disrepair and poor condition. Hence this study is to propose a maintenance priority list from the user perspective. In order to provide better user experience, the list is delivered using combination of ranking and correlation analysis. Based on the combination of analysis, ten (10) features and facilities that are deemed noteworthy to park user, the following features and facilities were arranged in descending of maintenance priority:

- i. Prayer room
- ii. Washroom
- iii. Signage
- iv. Design landscape – Hardscape
- v. Park lighting
- vi. Park furniture
- vii. Rubbish bin
- viii. Designed landscape – Softscape
- ix. Natural landscape
- x. Track and path



### 5.2.3.1 Recommendation on Maintenance Operations

Derived from maintenance operation of features facilities in section 2.6, Table 5.2 below are summary of maintenance operation of ten (10) features and facilities that needed to be prioritised in maintenance:

**Table 5.2: Maintenance operation of features and facilities needed to be prioritised**

| <b>Features and Facilities</b>              | <b>Type of Maintenance</b>            | <b>Maintenance Operation</b>                                                                                                                                                   |
|---------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prayer room                                 | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection of structure in every six (6) months</li> </ul>                                          |
|                                             | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted once a year</li> <li>• Immediate maintenance when needed</li> <li>• </li> </ul>                                  |
| Washroom                                    | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection of the structure in every six (6) months</li> </ul>                                      |
|                                             | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted once a year</li> <li>• Immediate maintenance when needed</li> </ul>                                              |
| Signage                                     | Structural maintenance                | <ul style="list-style-type: none"> <li>• Routine daily cleaning</li> <li>• Inspection of the structure in every six (6) months</li> </ul>                                      |
| Designed landscape - Hardscape              | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection conducted every three (3) months</li> </ul>                                              |
|                                             | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                   |
| Park Lighting                               | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> </ul>                                                                                                     |
|                                             | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                   |
| Park furniture (Gazebo, benches and others) | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul> |

Table 5.2, continued

| Features and Facilities                               | Type of Maintenance                   | Maintenance Operation                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Park furniture (Gazebo, benches and others)           | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                                                                                                                              |
| Rubbish bin                                           | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                                                                                            |
| Design landscape – Softscape (Tree, plant bed & Lawn) | Routine maintenance                   | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> </ul>                                                                                                                                                                                                                |
|                                                       | Routine maintenance - Irrigation      | <ul style="list-style-type: none"> <li>• Two times daily</li> </ul>                                                                                                                                                                                                                       |
|                                                       | Pruning                               | <ul style="list-style-type: none"> <li>• Tree inspected every six (6) months</li> <li>• Subjected to tree species, pruning done in three (3) to four (4) months, four (4) to six (6) months, and every six (6) to twelve (12) months.</li> <li>• Plant bed prune once a month.</li> </ul> |
|                                                       | Fertilising                           | <ul style="list-style-type: none"> <li>• Tree fertilised every four (4) six (6) months</li> <li>• Plant bed once a month</li> </ul>                                                                                                                                                       |
|                                                       | Pest or infectious disease            | <ul style="list-style-type: none"> <li>• Tree inspected every one (1) to three (3) months</li> <li>• Plant bed inspected every three (3) months</li> </ul>                                                                                                                                |
| Natural landscape                                     | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                                                                                            |
|                                                       | Mechanical and electrical maintenance | <ul style="list-style-type: none"> <li>• Inspection conducted every three (3) months</li> <li>• Immediate maintenance when needed</li> </ul>                                                                                                                                              |
| Track and path                                        | Structural maintenance                | <ul style="list-style-type: none"> <li>• Daily routine cleaning</li> <li>• Inspection conducted every six (6) months</li> <li>• Immediate maintenance when needed</li> </ul>                                                                                                              |

Source: National Landscape Department (2010)

Derived from comparison of interview result and public park performance, no complaint found on features and facilities such as natural landscape, softscape, and park lighting. Generally, public park user enjoyed clean natural landscape and prayer room, softscape such

as trees are well fertilised looking healthy and free from dangling branch which may cause injury to park user, and park lighting has to be well-lit to prevent criminal cases to ensure safety of user. Hence, there is no recommendation on revision of guidelines outlined by National Landscape Department.

However, there are improvement on maintenance operation of designed landscape – hardscape, tracks and path, park furniture, washroom, and signage recommended. For designed landscape – hardscape, inspection on the mechanical and electrical recommended to be shorten as it is found that water jet in a pond failed to work and affecting the aesthetic of park. For tracks and path, frequency of routine cleaning on removal of fallen leaves recommended to be increased especially after rain as dampen fallen leave may cause park user tripped and fell. Besides, inspection on tracks and path is recommended to be revised as tree roots are found lifted the track and path, there is also pothole which poses danger to park user.

For park furniture, it is recommended to scrutinise the inspection of gazebo and bench especially wooden benches as there were leaking roof found on gazebo and degradation of wooden benches in public parks has rendered them unusable, preventing park users from utilizing them for seating. For washroom, park user looking forward for clean washroom for comfortability, hence routine maintenance on frequency of daily cleaning is recommended to increase. For signage, it is essential to conduct inspection more frequent to ensure wording of signage is readable to avoid park user losing direction. For rubbish bin, it is essential to increase the frequency in routine maintenance emptying the rubbish bin to avoid rubbish over filled and scattered around.

### **5.3 Contribution to the Knowledge**

Park preferences study that covered features and facilities has been existed over the years. However, it is found that a public park features and facilities can be robust and there is still lack of comprehensive study on user preferences towards features and facilities that suits their need and preferences. Thus, this study contributed user preference towards park features and facilities at a wider choice to supplement the current field of research. Compliance on the provision of features and facilities are provided in order to provide current information of provision of public park features and facilities.

With respect to maintenance, the upkeep of public park features and facilities have always been a top-down approach executed by the park management. In spite of the fact that park users are the ones who are using the facility, their perception on maintenance has been overlooked. Thus, in order to enhance the user experience, park user has been actively participated in this collection of data regarding their encounter. The result from user experience towards maintenance of park features and facilities are compared against guideline provided by National Landscape Department and respective recommendation of maintenance of features and facilities are suggested.

In this research, information was sought to provide authority with information regarding provision and maintenance of public park features and facilities that is deemed important to the user to ensure the park are performed in the way that always satisfy its user and constantly bring returning visits.

#### **5.4 Recommendations for Future Research**

This research certainly contained a number of limitations. Therefore, for the betterment of park to be more inclusive, the research recommends future studies to explore the following:

- i. Study on perception at precise community location as perception of a community might differ from one another whom dwelled in different locality. Therefore, it is recommended that the inclusion of the design, planning and maintenance of park to take into account the community perception in design, planning and maintaining a park.
- ii. Study on perception of non-able body user as people with disability are certainly part of the society and their need, demands, and preferences certainly differ from the able-bodied park user. Therefore, it is recommended that future research to study on the perception of the disabled in order to assist authority in planning and maintaining public park that able to serve all peoples.
- iii. Detailed study in terms of maintenance aspect of each feature and facilities. As public park features and facilities can be robust, it's maintenance concern can be different from one another.
- iv. Analyse parks maintenance cost of each feature and facilities, take into account the notion of sustainability and evaluate the cost-effective way in maintaining a public park.

## REFERENCES

- Abbasi, A., Alalouch, C., & Bramley, G. (2016). Open space quality in deprived urban areas: User perspective and use pattern. *Procedia - Social and Behavioral Sciences*, 216, 194-205. <https://doi.org/10.1016/j.sbspro.2015.12.028>
- Abdelhamid, M. M., & Elfakharany, M. M. (2020). Improving urban park usability in developing countries: Case study of Al-Shalalat Park in Alexandria. *Alexandria Engineering Journal*, 59(1), 311-321. <https://doi.org/10.1016/j.aej.2019.12.042>
- Abdul Aziz, N. A., Lukhman, A. A., Chubo, J. K., & Daud, D. S. R. A. (2019). Public perception to littering in greenspaces: A case study in Bintulu, Sarawak, Malaysia. *Journal of Physics: Conference Series*, 1358, 012031. <https://doi.org/10.1088/1742-6596/1358/1/012031>
- Abdul Ghafar, M. Z. S. (2016). *Visitors' satisfaction towards facilities provided at Taman Tasik Metropolitan Kepong, Kuala Lumpur* [Degree's thesis, Universiti Putra Malaysia]. Universiti Putra Malaysia Institutional Repository. <http://psasir.upm.edu.my/id/eprint/78400/>
- Abdul Malek, N., & Nashar, A. (2018). Use pattern and activities: The evaluation of Malaysian green open space design. *Journal of the Malaysian Institute of Planners*, 16(3), 121-131. <https://doi.org/10.21837/pmjournal.v16.i7.505>
- Abdul Rahman, A. (2007). *Consumers' satisfaction towards recreational facilities and services in Ayer Keroh forest recreational area, Melaka* [Master's Thesis, Universiti Putra Malaysia]. Universiti Putra Malaysia Institutional Repository. [http://psasir.upm.edu.my/id/eprint/5017/1/FEP\\_2007\\_3.pdf](http://psasir.upm.edu.my/id/eprint/5017/1/FEP_2007_3.pdf)
- Abdullah, J., Ahmad, R., & Zainal, M. H. (2019). Benefit and returns of adopt-a-park programme in Kuala Lumpur. *Environment-Behaviour Proceedings Journal*, 4(12), 193-201. <https://doi.org/10.21834/e-bpj.v4i12.1930>
- Abdullah, M., Amat, R. Y., & Ariff Jamalludin, M. (1999). Recreational opportunities for public use in Ayer Hitam Forest: Setting the stage and park management approach. *Pertanika Journal of Tropical Agriculture Science*, 22(2), 161-166. [http://psasir.upm.edu.my/id/eprint/3796/1/Recreational\\_Opportunities\\_For\\_Public\\_Use\\_in\\_Ayer\\_Hitam\\_Forest.pdf](http://psasir.upm.edu.my/id/eprint/3796/1/Recreational_Opportunities_For_Public_Use_in_Ayer_Hitam_Forest.pdf)
- Academy of Social Sciences. (2021). *What is social science*. <https://acss.org.uk/what-is-social-science/>
- Afacan, Y., & Gurel, M. O. (2015). Public toilets: An exploratory study on the demands, needs, and expectations in Turkey. *Environment and Planning B: Planning and Design*, 42(2), 242-262. <https://doi.org/10.1068/b130020p>
- Afzelia, P. N., & Gunawan, A. (2022). Ecological design of Taman Merdeka as an alternative to the development of Depok city green open space. *IOP Conference Series: Earth and Environmental Science*, 1092(1), 012016. <https://doi.org/10.1088/1755-1315/1092/1/012016>

- Ahirwal, A. A. (2020). Recreational aspects of open green spaces in neighbourhood *International Journal of Research and Scientific Innovation (IJRSI)*, 7(6), 60-67. <https://rsisinternational.org/journals/ijrsi/digital-library/volume-7-issue-6/60-67.pdf>
- Ahmad, S., Ayob, Z., Mohd Hussain, N. H., & Mat Nayan, N. (2022). Assessment of landscape maintenance towards cost planning: Expert validation on the criteria of sustainable landscape maintenance for public park. *Planning Malaysia*, 20(3), 87-98. <https://doi.org/10.21837/pm.v20i22.1129>
- Ahmad Shafee, F. A., & Kamaruddin, S. M. (2019). The effective characteristics of an urban park through visitors perception case study: KLCC Park. *Built Environment Journal*, 16(2), 1-14. <https://doi.org/10.24191/bej.v16i2.9692>
- Ahmadiyya Muslim Community. (2025). *What are the main ritual objects that are used in prayer services?* <https://www.alislam.org/question/ritual-objects-prayer-services/>
- Akpınar, A. (2016). Factors influencing the use of urban greenways: A case study of Aydın, Turkey. *Urban Forestry & Urban Greening*, 16, 123-131. <https://doi.org/10.1016/j.ufug.2016.02.004>
- Al-mosa, Y., Parkinson, J., & Rundle-Thiele, S. (2017). A socioecological examination of observing littering behavior. *Journal of Nonprofit & Public Sector Marketing*, 29(3), 235-253. <https://doi.org/10.1080/10495142.2017.1326354>
- Alaska Channel. (2025). *Alaska kayaking season*. <https://www.alaska.org/advice/alaska-kayaking-seasons>
- Algrim, S. J. (2017). *Finding common ground: Horse riders' preferences and potential for conflict for varying management actions* [Master's thesis, Kansas State University]. K-State Electronic Theses, Dissertations, and Reports: 2004. <https://krex.k-state.edu/bitstream/handle/2097/38246/SusiAlgrim2017.pdf?sequence=1&isAllowed=y>
- Ali, S. M., & Nawawi, A. H. (2006). Factors that influence users' satisfaction on urban park. *Built Environmental Journal*, 3(2), 42-57.
- Aliki-Myrto, P. (2010). *How do waterscape projects combine landscape design and natural processes to create dialogues that engage both culture and nature? The case of the Boston park system and the solar city* [Workshop]. Hyper Articles en Ligne. <https://hal.science/hal-00521475/document>
- Allen, E. M., Hill, A. L., Tranter, E., & Sheehan, K. M. (2013). Playground safety and quality in Chicago. *Pediatrics*, 131(2), 233-241. <https://doi.org/10.1542/peds.2012-0643>
- Allen, M. (2017). *The SAGE encyclopedia of communication research methods* (Vol. 4). SAGE Publications, Inc.
- Alves, S., Aspinall, P., Ward Thompson, C., Sugiyama, T., Brice, R., & Vickers, A. (2008). Preferences of older people for environmental attributes of local parks: The use of

- choice-based conjoint analysis. *Facilities*, 26(11/12), 433-453. <https://doi.org/10.1108/02632770810895705>
- Alves, S. M., Gulwadi, G. B., & Cohen, U. (2006). Accommodating culturally meaningful activities in outdoor settings for older adults. *Journal of Housing For the Elderly*, 19(3-4), 109-140. [https://doi.org/10.1300/J081v19n03\\_07](https://doi.org/10.1300/J081v19n03_07)
- American Optometric Association. (n.d.). *Senior vision: Over 60 years of age*. <https://www.aoa.org/healthy-eyes/eye-health-for-life/senior-vision?sso=y>
- Amraotkar, S., & Gangopadhyay, D. (2023). Assessing user satisfaction of urban parks for sustainable cities: A pilot study of two urban parks in Chennai, India. *IOP Conference Series: Earth and Environmental Science*, 1210(1), 012039. <https://doi.org/10.1088/1755-1315/1210/1/012039>
- Andrade, C. (2020). Sample size and its importance in research. *Indian Journal of Psychological Medicine*, 42(1), 102-103. [https://doi.org/10.4103/ijpsym.Ijpsym\\_504\\_19](https://doi.org/10.4103/ijpsym.Ijpsym_504_19)
- Annuar, S. (2019, August 01). Kolam Taman Bulatan Miri kotor, banyak kerosakan - Pengunjung. *Utusan Borneo*. <https://www.utusanborneo.com.my/2019/08/01/kolam-taman-bulatan-miri-kotor-banyak-kerosakan-pengunjung>
- Anuar, A. N. A., & Muhamadan, N. H. (2018). The demand of recreational facilities in neighbourhood parks: Visitors' perspectives. *Journal of the Malaysian Institute of Planners*, 16(3), 197-207. <https://doi.org/10.21837/pmjournal.v16.i7.511>
- Arachchi, R. S. S. W., Amarasinghe, A. A. M. D., & Wijesundara, C. N. R. (2017). The study on level of visitor satisfaction at different park attributes of Yala National Park, Sri Lanka. *International Journal of Research in Management Science and Technology* 5(6), 5641-5649. [https://www.academia.edu/44920375/The\\_Study\\_on\\_Level\\_of\\_Visitor\\_Satisfaction\\_at\\_Different\\_Park\\_Attributes\\_of\\_Yala\\_National\\_Park\\_Sri\\_Lanka](https://www.academia.edu/44920375/The_Study_on_Level_of_Visitor_Satisfaction_at_Different_Park_Attributes_of_Yala_National_Park_Sri_Lanka)
- Arafat, H., Khatib, A., Daoud, R., & Shwahneh, H. (2007). Influence of socio-economic factors on street litter generation in the Middle East: Effects of education level, age, and type of residence. *Waste management & Research*, 25(4), 363-370. <https://doi.org/10.1177/0734242X07076942>
- Arntzen, S. (2002). *Cultural landscape and approaches to nature—Ecophilosophical perspectives*. Tallinn: Eesti Kunstiakadeemia.
- Asian Flooring India Private Limited. (n.d.). *Badminton Court Flooring*. <https://www.asianflooringindia.com/search.html?ss=Badminton+Court+Flooring>
- Association of Southeast Asian Nations (ASEAN). (2016). *ASEAN public toilet standard*. <https://www.asean.org/wp-content/uploads/2012/05/ASEAN-Public-Toilet-Standard.pdf>



- Astell-Burt, T., & Feng, X. (2019). Association of urban green space with mental health and general health among adults in Australia. *Journal of the American Medical Association*, 2(7), 1-22. <https://doi.org/10.1001/jamanetworkopen.2019.8209>
- Aswad, R. M., Yahya, N. A., & Ahmad Nazarudin, M. R. (2009). An evaluation of the importance and performance of Gunung Lang recreational park's facilities and activities. S. Maruthaveeran, N. A. Yahya, & A. A. Noor (Eds.), *Proceedings of the Urban Forestry Conference 2009 : Lessons for sustainable development*, 110-117. Forest Research Institute Malaysia (FRIM). <http://agris.upm.edu.my:8080/dspace/handle/0/1369>
- Atsari, R., Sulistyarso, H., & Pamungkas, A. (2018). Urban park arrangement concept to support improvement of active physical activity and recreation activity. *International Journal of Scientific and Research Publications*, 8(8), 349-354. <https://doi.org/10.29322/IJSRP.8.8.2018.p8043>
- Au, A. M. (2003). Pesticides and herbicides | Types, uses, and determination of herbicides. In B. Caballero (Ed.), *Encyclopedia of food sciences and nutrition* (2 ed., pp. 4483-4487). Academic Press.
- Au Yong, C. P., Ali, A. S., & Chua, S. J. L. (2019). Maintenance priority in high-rise housings: Practitioners' perspective versus actual practice. *Journal of Engineering Research*, 7(2), 167-177. <https://kuwaitjournals.org/jer/index.php/JER/article/view/5494>
- Auchter, R. (2016, February 5). *Cranberry township public works grounds maintenance division parks maintenance plan*. SlideShare. <https://www.slideshare.net/slideshow/parks-maintenance-plan/57924375#1>
- Ayala-Azcárraga, C., Diaz, D., & Zambrano, L. (2019). Characteristics of urban parks and their relation to user well-being. *Landscape and Urban Planning*, 189, 27-35. <https://doi.org/10.1016/j.landurbplan.2019.04.005>
- Azenan, M. F., Rahman, S. A. A., & Mahamod, L. H. (2021). The visitors' satisfaction visiting Kuala Lumpur and Selangor recreational parks. *Journal of Tourism, Hospitality & Culinary Arts (JTHCA)*, 13(2), 72-84.
- Aziz, N. A. A., Bosch, K. V. D., & Nillson, K. (2018). Recreational use of urban green space in Malaysian cities. *International Journal of Business and Society*, 19(1), 1-16.
- Badminton World Federation (BWF). (2018). *Equipment approval scheme*. <https://corporate.bwfbadminton.com/events/equipment-approval-scheme/>
- Badrulhisham, N., & Othman, N. (2016). Knowledge in tree pruning for sustainable practices in urban setting: improving our quality of life. *Procedia - Social and Behavioral Sciences*, 234, 210-217. <https://doi.org/10.1016/j.sbspro.2016.10.236>
- Bahriny, F., & Bell, S. (2020). Patterns of urban park use and their relationship to factors of quality: A case study of Tehran, Iran. *Sustainability*, 12(4), 1560-1592. <https://doi.org/10.3390/su12041560>

- Bahriny, F., & Bell, S. (2021). Traditional versus modern? Perceptions and preferences of urban park users in Iran. *Sustainability*, 13(4), 2036-2062. <https://doi.org/10.3390/su13042036>
- Bakar, J. A. (2002). *A design guide for public parks in Malaysia*. Universiti Teknologi Malaysia.
- Baker, D. A., & Crompton, J. L. (2000). Quality, satisfaction and behavioral intentions. *Annals of Tourism Research*, 27(3), 785-804. [https://doi.org/10.1016/S0160-7383\(99\)00108-5](https://doi.org/10.1016/S0160-7383(99)00108-5)
- Barber, A. (2005). *Green future: A study of the management of multifunctional urban green spaces in England*. GreenSpace Forum.
- Barcaldine Regional Council. (2014). *Footpath maintenance level of service manual*. <https://www.barcaldinerc.qld.gov.au/downloads/file/105/20140416-general-meeting-minutes-16-april-2014-attachment-d-pdf>
- Basri, B. H. (2011). *Valuing the attributes of Malaysian recreational parks: A choice experiment approach* [Doctoral dissertation, Newcastle University]. Connecting Repositories. <https://core.ac.uk/download/pdf/153776777.pdf>
- Beard, J. B., & Green, R. L. (1994). The role of turfgrasses in environmental protection and their benefits to humans. *Journal of Environmental Quality*, 23(3), 452-460. <https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/1/14282/files/2018/04/Role-of-Turf-in-Environmental-Protection-Beard-and-Green-1w9e95q.pdf>
- Benjamin, N. (2022, May 12). Playgrounds in poor state. *The Star*. <https://www.thestar.com.my/metro/metro-news/2022/05/12/playgrounds---in-poor-state>
- Birkenhead Park. (n.d.). *The parkland and its wildlife*. <https://birkenhead-park.org.uk/explore/the-parkland-and-its-wildlife/>
- Bjerke, T., Østdahl, T., Thrane, C., & Strumse, E. (2006). Vegetation density of urban parks and perceived appropriateness for recreation. *Urban Forestry & Urban Greening*, 5(1), 35-44. <https://doi.org/10.1016/j.ufug.2006.01.006>
- Blümel, M., & Amort, F. (2016). Multigenerational playgrounds – an approach promoting physical activity and community health. *European Journal of Public Health*, 26(1), 174-223. <https://doi.org/10.1093/eurpub/ckw174.223>
- Borgers, A., Timmermans, H., & van der Waerden, P. (2007). Spatially differentiated utility functions for urban greenspace: A test based on conjoint choice experiments. In A. G. Woodside (Ed.), *Advances in culture, tourism and hospitality research* (Vol. 1, pp. 215-226). Elsevier Ltd.
- Bowen, B. E., & Radhakrishna, R. B. (1991). Job satisfaction of agricultural education faculty: A constant phenomena. *Journal of Agricultural Education*, 32(2), 16-22. <https://doi.org/10.5032/jae.1991.02016>

- Boyatzis, C. J., & Varghese, R. (1994). Children's emotional associations with colors. *The Journal of Genetic Psychology*, 155(1), 77-85. <https://doi.org/10.1080/00221325.1994.9914760>
- Brede, D. (2000). *Turfgrass maintenance reduction handbook: Sports, lawns, and golf*. Sleeping Bear Press.
- Brian, E. S., Lawrence, D. F., Christopher, A., Robert, C. W., Hillary, L. B., & Natalie, C. (2006). Measuring physical environments of parks and playgrounds: EAPRS Instrument development and inter-rater reliability. *Journal of Physical Activity and Health*, 3(1), 190-207. <https://doi.org/10.1123/jpah.3.s1.s190>
- Broner, I. (n.d.). *Irrigation scheduling*. Colorado State University Extension. <https://extension.colostate.edu/docs/pubs/crops/04708.pdf>
- Brookhaven Parks and Recreation. (2020). *Park and recreation maintenance plan/standards*. [https://www.brookhavenga.gov/sites/default/files/fileattachments/parks\\_and\\_recreation/page/16904/parks\\_and\\_recreation\\_maintenance\\_plan\\_standards\\_2020.pdf](https://www.brookhavenga.gov/sites/default/files/fileattachments/parks_and_recreation/page/16904/parks_and_recreation_maintenance_plan_standards_2020.pdf)
- Brooks, H., & Nielson, J. P. (2013). *Basics of retaining wall design: A design guide for earth retaining structures* (10th ed.). HBA Publications.
- Brown, T. J., Ham, S. H., & Hughes, M. (2010). Picking up litter: an application of theory-based communication to influence tourist behaviour in protected areas. *Journal of Sustainable Tourism*, 18(7), 879-900. <https://doi.org/10.1080/09669581003721281>
- Brownsville Parks and Recreation. (2015). *Park maintenance operations plan*. [https://www.brownsvilletx.gov/DocumentCenter/View/2752/Brownsville\\_PARD\\_MaintenanceOperationsPlan?bidId=](https://www.brownsvilletx.gov/DocumentCenter/View/2752/Brownsville_PARD_MaintenanceOperationsPlan?bidId=)
- Burillo, P., Gallardo, L., Felipe, J. L., & Gallardo, A. M. (2014). Artificial turf surfaces: Perception of safety, sporting feature, satisfaction and preference of football users. *European Journal of Sport Science*, 14(1), 437-447. <https://doi.org/10.1080/17461391.2012.713005>
- Burns, R. C., Graefe, A. R., & Absher, J. D. (2003). Alternate measurement approaches to recreational customer satisfaction: Satisfaction-only versus gap scores. *Leisure Sciences*, 25(4), 363-380. <https://doi.org/10.1080/714044496>
- CABE Space. (2004). *Is the grass greener...? Learning from international innovations in urban green space management*. <http://www.cabespace..org..uk/data/pdfs/greenspacestrategies..pdf>
- Cairns, M. (1997). *History of Illinois park districts*. Illinois Periodicals Online. <https://www.lib.niu.edu/1997/ip970923.html>
- Cambridge Dictionary. (2021). *Functionality*. <https://dictionary.cambridge.org/dictionary/english/functionality>

- Cameron, A. G. (2006). *Lawns-Establishment and maintenance*. Northern Territory Government. [https://industry.nt.gov.au/\\_\\_data/assets/pdf\\_file/0008/232937/488.pdf](https://industry.nt.gov.au/__data/assets/pdf_file/0008/232937/488.pdf)
- Cantwell, J. D. (2004). The physician who invented basketball. *The American Journal of Cardiology*, 93(8), 1075-1077. <https://doi.org/10.1016/j.amjcard.2003.12.068>
- Carr, S., Francis, M., Rivlin, L. G., & Stone, A. M. (1992). *Public space*. Cambridge University Press.
- Çay, R. D. (2015). Recreation and urban park management. In R. Efe, C. Bizzarri, I. Cürebal, & G. N. Nyusupova (Eds.), *Environment and ecology at the beginning of 21st century* (pp. 302-312). St. Kliment Ohridski University Press.
- Çay, R. D. (2017). Assessment of the safety of playgrounds in terms of surface material and equipment. In M. Özyavuz (Ed.), *Sustainable landscape planning and design* (pp. 161-171). Peter Lang GmbH.
- Çay, R. D., & Oguz, D. (2016). Recreational requirements of adolescents on parks in Ankara, Turkey. In R. Efe, I. Cürebal, A. Gad, & B. Tóth (Eds.), *Environmental sustainability and landscape management*. St. Kliment Ohridski University Press.
- Centers for Disease Control (CDC). (1988). Playground-related injuries in preschool-aged children--United States, 1983-1987. *Morbidity and Mortality Weekly Report*, 37(41), 629-632. <https://pubmed.ncbi.nlm.nih.gov/3139984/>
- Central Park. (2018). *Central Park History*. <https://centralpark.org/history-of-central-park/>
- Central Park Conservancy. (n.d.). *Park History*. <https://www.centralparknyc.org/park-history#:~:text=New%20York's%20Central%20Park%20is,of%20the%20rapidly%20growing%20City.&text=Located%20in%20what%20is%20now,Park%20began%20in%20the%201850s.>
- Centre for Urban Greenery & Ecology. (2015). *Sustainable landscape*. <https://www.nparks.gov.sg/-/media/cuge/ebook/sustainable-landscape/sustainable-landscape.pdf>
- Centre for Urban Greenery and Ecology. (2011). *Know your turfgrass*. Singapore National Parks Board. Retrieved from [https://www.nparks.gov.sg/-/media/cuge/pdf/rtn-02-2011---know-your-turfgrass---cowgrass-\(-axonopus-compressus\).pdf?la=en&hash=C7F0FC5D9A955EC99D35E68FF22C0CF082FFC454](https://www.nparks.gov.sg/-/media/cuge/pdf/rtn-02-2011---know-your-turfgrass---cowgrass-(-axonopus-compressus).pdf?la=en&hash=C7F0FC5D9A955EC99D35E68FF22C0CF082FFC454)
- Centre for Urban Greenery and Ecology. (2013). *Choosing the right turf for low maintenance*. Singapore National Parks Board. Retrieved from <https://www.nparks.gov.sg/-/media/cuge/pdf/rtn-09-2013---choosing-the-right-turf-for-low-maintenance.pdf?la=en&hash=FFC1F1729F3D5F162539FE5EDC6F8E5239E8DC E2>

- Çevik, H. (2020). The relationship between park satisfaction, place attachment and revisit intention in neighborhood parks with physical activity facilities. *Journal of Education and Learning*, 9(2), 178-183. <https://doi.org/10.5539/jel.v9n2p178>
- Chan, C. S., Si, F. H., & Marafa, L. M. (2018). Indicator development for sustainable urban park management in Hong Kong. *Urban Forestry & Urban Greening*, 31, 1-14. <https://doi.org/10.1016/j.ufug.2018.01.025>
- Château de Versailles. (n.d.). *History*. <https://en.chateauversailles.fr/discover/history#louis-xiii-and-versailles1607-1638>
- Chavez, D. J., & Olson, D. D. (2008). *Diverse users of four urban national forests: Participation, preferences, and perceptions*. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. Retrieved from <https://research.fs.usda.gov/treesearch/40628>
- Che Rose, R. A., & Basri, N. (2019). Analisis tahap kepuasan pengunjung di taman rekreasi awam Sabah. *Malaysian Journal of Society and Space*, 15(4), 336-349. <https://doi.org/10.17576/geo-2019-1504-24>
- Chen, B., Adimo, O. A., & Bao, Z. (2009). Assessment of aesthetic quality and multiple functions of urban green space from the users' perspective: The case of Hangzhou Flower Garden, China. *Landscape and Urban Planning*, 93(1), 76-82. <https://doi.org/10.1016/j.landurbplan.2009.06.001>
- Chen, X., & Wu, J. (2009). Sustainable landscape architecture: Implications of the Chinese philosophy of "unity of man with nature" and beyond. *Landscape Ecology*, 24(8), 1015-1026. <https://doi.org/10.1007/s10980-009-9350-z>
- Chen, Y., Liu, T., Xie, X., & Marušić, B. G. (2016). What attracts people to visit community open spaces? A case study of the overseas chinese town community in Shenzhen, China. *International Journal of Environmental Research and Public Health*, 13(7), 644-660. <https://doi.org/10.3390/ijerph13070644>
- Chiang, Y. C., Chang, C. Y., & Ou, S. J. (2011). Influences of environmental property of forest trail on psychological evaluation responses. *Journal of Outdoor Recreation Study*, 24, 75-100.
- Chien, M. C. (2017). An empirical study on the effect of attractiveness of ecotourism destination on experiential value and revisit intention. *Applied Ecology and Environmental Research*, 15(2), 43-53. [https://doi.org/10.15666/aer/1502\\_043053](https://doi.org/10.15666/aer/1502_043053)
- Chin, M. K., Wong, A. S., So, R. C. H., Siu, O. T., Steininger, K., & Lo, D. T. L. (1995). Sport specific fitness testing of elite badminton players. *British Journal of Sports Medicine*, 29(3), 153-157. <https://doi.org/https://10.1136/bjism.29.3.153>
- Chomeya, R. (2010). Quality of psychology test between Likert scale 5 and 6 points. *Journal of Social Sciences*, 6(3), 399-403. <https://thescipub.com/pdf/jssp.2010.399.403.pdf>

- Choquette, J. D., & Hand, A. V. (2021). Informational signage increases awareness of a rattlesnake in a Canadian urban park system. *Human-Wildlife Interactions*, 15(1), 124-137.  
<https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1649&context=hwi>
- Chow, B. C., McKenzie, T. L., & Sit, C. H. P. (2016). Public arks in Hong Kong: Characteristics of physical activity areas and their users. *International Journal of Environmental Research and Public Health*, 13(7), 639.  
<https://doi.org/https://10.3390/ijerph13070639>
- Chow, H. W. (2013). Outdoor fitness equipment in parks: a qualitative study from older adults' perceptions. *BMC Public Health*, 13(1), 1216. <https://doi.org/10.1186/1471-2458-13-1216>
- Chua, E. (2024, February 27). Fishing in public parks and old ponds offeres excitement and relaxation. *The Star*.  
<https://www.thestar.com.my/lifestyle/travel/2024/02/27/serenity-fishing-in-old-ponds>
- Cilliers, E. J. (2015). A framework for planning green spaces in rural South Africa. *Agriculture Forestry and Fisheries*, 4(4), 80-86.  
<https://doi.org/10.11648/j.aff.s.2015040401.20>
- City of Burnsville. (n.d.). *Common concerns about ponds & lakes*.  
<https://www.burnsvillemn.gov/1600/Common-Pond-Concerns>
- City of Glendora. (2018). *City of Glendora community services department parks maintenance manual*.  
<https://www.cityofglendora.org/home/showpublisheddocument/24813/636840085853370000>
- City of Lake Stevens. (2012). *Park facilities maintenance and repairs management plan*.  
<https://www.lakestevenswa.gov/DocumentCenter/View/1250/POL---Parks-maintenance-and-repairs-policy-and-procedures?bidId=>
- City of London. (2018). *Light + darkness in the city - A lighting vision for the City of London*.  
<https://www.cityoflondon.gov.uk/assets/Services-Environment/city-of-london-lighting-strategy.pdf>
- City of Los Angeles. (2020). *Park governance, operations & maintenance*.  
<https://engineering.lacity.gov/sites/g/files/wph1701/files/2021-10/SLRCMP%20-%2008%20Park%20Governance%2C%20Operations%20and%20Maintenance.pdf>
- City of Malibu. (n.d.). *Park maintenance program*.  
<https://www.malibucity.org/DocumentCenter/View/10247/Park-Maintenance-Program---Web-Page-2014-Red-Line?bidId=>

- City of Pitt Meadows. (2019). *Parks maintenance policy*. [https://www.pittmeadows.ca/sites/default/files/uploads/policies/c103\\_parks\\_maintenance\\_policy.pdf](https://www.pittmeadows.ca/sites/default/files/uploads/policies/c103_parks_maintenance_policy.pdf)
- City of Whitehorse. (2015). *Parks maintenance policy*. <https://www.whitehorse.ca/home/showpublisheddocument/5590/635762740393370000>
- Clemson Extension Home & Garden Information Center. (2023). *Fertilizing trees & shrubs*. <https://hgic.clemson.edu/factsheet/fertilizing-trees-shrubs/#:~:text=Trees%20and%20shrubs%20should%20be,drought%20during%20the%20summer%20months>.
- Cohen, D. A., & Leuschner, K. J. (2019). How can neighborhood parks be used to increase physical activity? *Rand Health Quarterly*, 8(3), 4. <https://pubmed.ncbi.nlm.nih.gov/31205804/>
- Cohen, D. A., Marsh, T., Williamson, S., Golinelli, D., & McKenzie, T. L. (2012). Impact and cost-effectiveness of family fitness zones: A natural experiment in urban public parks. *Health & Place*, 18(1), 39-45. <https://doi.org/10.1016/j.healthplace.2011.09.008>
- Cohen, D. A., McKenzie, T. L., Sehgal, A., Williamson, S., Golinelli, D., & Lurie, N. (2007). Contribution of public parks to physical activity. *American Journal of Public Health*, 97(3), 509-514. <https://doi.org/10.2105/AJPH.2005.072447>
- Cohut, M. (2018, February 23). *What are the health benefits of being social?* Medical News Today. <https://www.medicalnewstoday.com/articles/321019>
- Cook, T. (2013). *Maintenance standards for soil base soccer fields*. Washington State University. <https://puyallup.wsu.edu/turf/soil-fields/>
- Cordell, H. K., & James, G. A. (1973). Visitors' preferences for certain physical characteristics of developed campsites. *Journal of Travel Research*, 12(2), 26. <https://doi.org/10.1177/004728757301200225>
- Cradock, A. L., Kawachi, I., Colditz, G. A., Hannon, C., Melly, S. J., Wiecha, J. L., & Gortmaker, S. L. (2005). Playground safety and access in Boston neighborhoods. *American Journal of Preventive Medicine*, 28(4), 357-363. <https://doi.org/10.1016/j.amepre.2005.01.012>
- Cranney, L., Phongsavan, P., Kariuki, M., Stride, V., Scott, A., Hua, M., & Bauman, A. (2016). Impact of an outdoor gym on park users' physical activity: A natural experiment. *Health & Place*, 37, 26-34. <https://doi.org/10.1016/j.healthplace.2015.11.002>
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches* (3rd ed.). SAGE Publications, Inc.

- Dajani, H. (2022, April 7). Ramadan 2019: Why muslims pray five times per day. *The National*. <https://www.thenational.ae/uae/heritage/ramadan-2019-why-muslims-pray-five-times-per-day-1.861000#:~:text=Praying%20five%20times%20a%20day,ends%20once%20the%20sun%20rises>.
- Dali, M. (2003). Development of Kuala Lumpur urban parks: The past and its present. *Journal of the Department of History*, 11(11), 105-121. <https://doi.org/10.22452/sejarah.vol11no11.6>
- Danjaji, A. S., Ariffin, M., Sharaai, A. H., & Yunos, Y. M. (2018). Impact of urban green space attribute on visitors' satisfaction in Putrajaya: Malaysia. *International Journal Environment and Sustainable Development*, 17(1), 19-35. <https://doi.org/10.1504/IJESD.2018.089271>
- Demir, Z., Müderrisoğlu, H., Aşikkutlu, H. S., & Bollukçu, P. A. (2010). Determination of user satisfaction for management practices on recreational areas. *African Journal of Agricultural Research*, 5(8), 692-699. <https://doi.org/10.5897/AJAR09.714>
- Dempsey, N. (2008). Quality of the built environment in urban neighbourhoods. *Planning Practice and Research*, 23(2), 249-264. <https://doi.org/10.1080/02697450802327198>
- Dempsey, N., Smith, H., & Burton, M. (2014). *Place-keeping: Open space management in practice*. Routledge.
- Denai Alam Recreational and Riding Club (DARC). (2023). *All about horses*. <https://darchorse.com.my/all-about-horses>
- Deng, L., Li, X., Luo, H., Fu, E. K., Ma, J., Sun, L. X., Huang, Z., Cai, S. Z., & Jia, Y. (2020). Empirical study of landscape types, landscape elements and landscape components of the urban park promoting physiological and psychological restoration. *Urban Forestry & Urban Greening*, 48, 126488. <https://doi.org/10.1016/j.ufug.2019.126488>
- Department of Environment and Heritage Protection. (n.d.). *Parks, gardens and landscape maintenance*. [https://www.qld.gov.au/\\_data/assets/pdf\\_file/0028/66295/tn-parks-gardens.pdf](https://www.qld.gov.au/_data/assets/pdf_file/0028/66295/tn-parks-gardens.pdf)
- Department of Irrigation and Drainage. (2012). *Urban stormwater management manual for Malaysia* (2nd ed.). Department of Irrigation and Drainage (DID) Malaysia. [https://www.water.gov.my/jps/resources/PDF/MSMA2ndEdition\\_august\\_2012.pdf](https://www.water.gov.my/jps/resources/PDF/MSMA2ndEdition_august_2012.pdf)
- Department of Statistics Malaysia (DOSM). (2011). *Population distribution and basic demographic characteristics report 2010*. [https://www.dosm.gov.my/v1/index.php?r=column/cthem&menu\\_id=L0pheU43N WJwRWVSZklWdzQ4TlhUUT09&bul\\_id=MDMxdHZjWtk1SjFzTzNkRXYzcV Zjdz09](https://www.dosm.gov.my/v1/index.php?r=column/cthem&menu_id=L0pheU43N WJwRWVSZklWdzQ4TlhUUT09&bul_id=MDMxdHZjWtk1SjFzTzNkRXYzcV Zjdz09)
- Department of Statistics Malaysia (DOSM). (2020). *Latest statistics 2020*. <https://www.mycensus.gov.my/#latest-statistics-2020>



- Department of Statistics Malaysia (DOSM). (2021). *Current population estimates, Malaysia, 2021*.  
[https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=155&bul\\_id=ZjJOSnpJR21sQWVUcUp6ODRudm5JZz09&menu\\_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09](https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=155&bul_id=ZjJOSnpJR21sQWVUcUp6ODRudm5JZz09&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09)
- Department of Town and Country Planning. (2014). *Garis panduan perancangan dan pembangunan*. Malaysia: Kementerian Kesejahteraan Bandar, Perumahan dan Kerajaan Tempatan. Retrieved from [https://jkt.kpkt.gov.my/wp-content/d/sites/default/files/2021-12/GP\\_Perumahan.pdf](https://jkt.kpkt.gov.my/wp-content/d/sites/default/files/2021-12/GP_Perumahan.pdf)
- DePoy, E., & Gitlin, L. N. (2016). Naturalistic designs. In E. DePoy & L. N. Gitlin (Eds.), *Introduction to research* (5 ed., pp. 158-172). Mosby.  
<https://www.sciencedirect.com/science/article/pii/B9780323261715000112>
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2017). *Maintenance and repair manual for grassroots sports grounds*.  
<https://www.sportanddev.org/sites/default/files/downloads/mr.pdf>
- Dewan Negeri Selangor. (2023). *Taman-taman rekreasi*.  
<https://dewan.selangor.gov.my/question/taman-taman-rekreasi/>
- Dinda, S., & Ghosh, S. (2021). Perceived benefits, aesthetic preferences and willingness to pay for visiting urban parks: A case study in Kolkata, India. *International Journal of Geoheritage and Parks*, 9(1), 36-50. <https://doi.org/10.1016/j.ijgeop.2020.12.007>
- Dizdaroglu, D. (2022). *Contemporary issues in architecture and urban planning*. Metin Copy Plus.
- Doğrusoy, İ. T., & Zengel, R. (2017). Analysis of perceived safety in urban parks: A field study in Büyükpark and Hasanağa park. *Journal of The Faculty of Architecture*, 34(1), 63-84. <https://doi.org/10.4305/METU.JFA.2017.1.7>
- Domosh, M. (2001). Cultural landscape in environmental studies. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 3081-3086). Pergamon.
- Driver, B. L., & Ross Tocher, S. (1979). Toward a behavioral interpretation of recreational engagements with implications for planning. In C. S. Van Doren, G. B. Priddle, & J. E. Lewis (Eds.), *Land and Leisure: Concepts and Methods in Outdoor Recreation* (2nd ed., pp. 86-104). Routledge.
- Dugar, A. (2011). *Lighting urban parks – reviewing the basics*. ResearchGate.  
[https://www.researchgate.net/publication/286931404\\_Lighting\\_urban\\_parks\\_-\\_reviewing\\_the\\_basics](https://www.researchgate.net/publication/286931404_Lighting_urban_parks_-_reviewing_the_basics)
- Duijster, D., Monse, B., Marquez, M., Pakes, U., Stauf, N., & Benzian, H. (2022). Improving toilet usability and cleanliness in public schools in the Philippines using a packaged operation and maintenance intervention. *International Journal of Environmental*

- Dumitras, E. D., & Dragoi, S. (2008). Analysis of tourists' preferences for public recreation areas. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Horticulture*, 64(1-2), 339-343. <https://doi.org/10.15835/buasvmcn-hort:2039>
- Dunnett, N., Swanwick, C., & Woolley, H. (2002). *Improving urban parks, play areas and green spaces*. Department for Transport, Local Government and the Regions.
- Durmus, D. (2021). Correlated color temperature: Use and limitations. *Lighting Research & Technology*, 54(4), 363-375. <https://doi.org/10.1177/14771535211034330>
- Dutwin, D., Loft, J. D., Darling, J. E., Holbrook, A. L., Johnson, T. P., Langley, R. E., Lavrakas, P. J., Olson, K., Peytcheva, E., Stec, J. A., Triplett, T., & Zukerberg, A. (2015). Current knowledge and considerations regarding survey refusals: Executive summary of the AAPOR task force report on survey refusals. *Public Opinion Quarterly*, 79(2), 411-419. <https://doi.org/10.1093/poq/nfv025>
- Düzenli, T., Mumcu, S., Yılmaz, S., & Özbilen, A. (2014). Water reflections on the social dimension of place: Different waterscapes and related activity patterns. *Turkish Journal of Forestry*, 15(2), 148-157. <https://dergipark.org.tr/en/pub/tjf/issue/20903/224494>
- Duzenli, T., & Özkan, D. (2016). Purposes of waterscapes usage in landscape architecture. In R. Efe, İ. Cürebal, A. Gad, & B. Tóth (Eds.), *Environmental sustainability and landscape management* (pp. 412-424). St. Kliment Ohridski University Press.
- Dworkin, S. L. (2012). Sample size policy for qualitative studies using in-depth interviews. *Archives of Sexual Behavior*, 41(6), 1319-1320. <https://doi.org/10.1007/s10508-012-0016-6>
- Eastern, D. (2023). *Landscape maintenance and management plan*. Macfarlane + Associates. [https://assets.publishing.service.gov.uk/media/64bfe430d4051a00145a92f4/3261.MA.RP002\\_LANDSCAPE\\_MAINTENANCE\\_AND\\_MANAGEMENT\\_PLAN\\_Redacted.pdf](https://assets.publishing.service.gov.uk/media/64bfe430d4051a00145a92f4/3261.MA.RP002_LANDSCAPE_MAINTENANCE_AND_MANAGEMENT_PLAN_Redacted.pdf)
- Edgar, T. W., & Manz, D. O. (2017). Descriptive study. In T. W. Edgar & D. O. Manz (Eds.), *Research methods for cyber security* (pp. 131-151). Syngress.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62, 107-115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Espinoza, L. G. A. (2019). The rethinking and enhancement of the natural and cultural heritage of the cultural landscapes: The case of Sečovlje and Janubio salt pans. *Revista de Turismo y Patrimonio Cultural*, 17(4), 671-693. <https://doi.org/10.25145/j.pasos.2019.17.048>

- European Environment Agency (EEA). (2015). *European environment–state and outlook 2015: Assessment of global megatrends*. Rosendahls-Schultz Grafis.
- Evdokimoff, N. (2020). *For the love of sports volleyball*. Weigl Publishers.
- Evenson, K. R., Williamson, S., Han, B., McKenzie, T. L., & Cohen, D. A. (2019). United States' neighborhood park use and physical activity over two years: The national study of neighborhood parks. *Preventive Medicine*, 123, 117-122. <https://doi.org/10.1016/j.ypmed.2019.03.027>
- Ewing, R., & Handy, S. (2009). Measuring the unmeasurable: Urban design qualities related to walkability. *Journal of Urban Design*, 14(1), 65-84. <https://doi.org/10.1080/13574800802451155>
- Ewing, R., Handy, S., Brownson, R. C., Clemente, O., & Winston, E. (2006). Identifying and measuring urban design qualities related to walkability. *Journal of Physical Activity and Health*, 3(1), 223-240. <https://doi.org/10.1123/jpah.3.s1.s223>
- Excelsports. (2019a). *Basketball Court Flooring System*. <https://www.excelsports.com.my/sports/basketball-court-contractor-malaysia/#:~:text=Basketball%20courts%20are%20typically%20built,on%20top%20of%20your%20game>.
- Excelsports. (2019b). *Acrylic hardcourt flooring system*. <https://www.excelsports.com.my/excelsports-acrylic-hardcourt-flooring-system/>
- Excelsports. (2019c). *Futsal court flooring contractor*. <https://www.excelsports.com.my/sports/futsal-court-flooring-contractor-malaysia/>
- Ezennia, I. S., Uwajeh, P. C., & Irouke, V. M. (2017). User perception of neighbourhood parks and open spaces: A case of Karakol, North Cyprus. *ResearchGate*, 6(8), 263-269. <https://www.ijstr.org/final-print/aug2017/User-Perception-Of-Neighbourhood-Parks-And-Open-Spaces-A-Case-Of-Karakol-North-Cyprus.pdf>
- Fadiman, M. (2016). *Environmental justice and the lawn: Urban parks in Shanghai, China*. *Florida Online Journal*, 47, 1-21. <https://journals.flvc.org/flgeog/article/view/88310/84871>
- Fang, W. T., Chang, H. W., & Huang, Y. W. (2011). Cycling recreation experiences and facilities: A case study of the Danshui riverside bike path, Taiwan. *International Journal of Agricultural Travel and Tourism*, 2(1), 7-19.
- Farris, J. A. *Contingency and opportunity: The first century of Hong Kong's public parks*. ResearchGate. [https://www.researchgate.net/publication/335023532\\_Contingency\\_and\\_Opportunity\\_The\\_First\\_Century\\_of\\_Hong\\_Kong's\\_Public\\_Parks](https://www.researchgate.net/publication/335023532_Contingency_and_Opportunity_The_First_Century_of_Hong_Kong's_Public_Parks)
- Fatiah, A. A., Zakiah Ponrahono, & Khalilah Zakariya. (2021). Quality of designs and features of small urban green spaces in Petaling Jaya town, Malaysia. *Journal of the*

*Malaysian Institute of Planners*, 19(1), 138-149.  
<https://doi.org/10.21837/pm.v19i15.931>

Federal Department of Town and Country Planning. (2005). *Open spaces in urban Malaysia*. Ministry of Housing and Local Government Malaysia.

Fédération Internationale de Football Association. *Turf and pitch design*.  
<https://publications.fifa.com/es/football-stadiums-guidelines/general-process-guidelines/design/turf-and-pitch-design/>

Feng, L., & Zhao, J. (2022). Evaluation of urban park landscape satisfaction based on the Fuzzy-IPA Model: A case study of the Zhengzhou People's Park. *Mathematical Problems in Engineering*, 2022(116532), 1-7. <https://doi.org/10.1155/2022/2116532>

Fink, A. (2003). What is a survey? when do you use one? In *The survey handbook* (2 ed., pp. 1-29). SAGE Publications, Inc. <https://doi.org/10.4135/9781412986328>

Fletcher, D., & Fletcher, H. (2003). Manageable predictors of park visitor satisfaction: Maintenance and personnel. *Journal of Park and Recreation Administration*, 21(1), 21-37. <https://js.sagamorepub.com/index.php/jpra/article/view/1515/1481>

Floyd, M. F. (1997). Pleasure, arousal, and dominance: Exploring affective determinants of recreation satisfaction. *Leisure Sciences*, 19(2), 83-96.  
<https://doi.org/10.1080/01490409709512241>

Forthofer, R. N., Lee, E. S., & Hernandez, M. (2007). Descriptive methods. In R. N. Forthofer, E. S. Lee, & M. Hernandez (Eds.), *Biostatistics* (2nd ed., pp. 21-69). Academic Press.  
<https://www.sciencedirect.com/science/article/pii/B978012369492850008X>

Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. K. (2017). How important are high response rates for college surveys?. *The Review of Higher Education*, 40(2), 245-265.  
<https://prod.wp.cdn.aws.wfu.edu/sites/202/2020/02/Fosnacht-2017-how-important-are-high-response-rates-for-college-surveys-3.pdf>

Foster, R. J., & Jackson, E. L. (1979). Factors associated with camping satisfaction in Alberta Provincial Park campgrounds. *Journal of Leisure Research*, 11(4), 292-306.  
<https://doi.org/10.1080/00222216.1979.11969407>

Fu, H. (2013). Impacts of community sports station on the sports activities of elderly people. *Applied Mechanics and Materials*, 380-384, 4868-4871.  
<https://doi.org/10.4028/www.scientific.net/AMM.380-384.4868>

Furber, S., Pomroy, H., Grego, S., & Tavener-Smith, K. (2014). People's experiences of using outdoor gym equipment in parks. *Health Promotion Journal of Australia*, 25(3), 211.  
<https://doi.org/10.1071/HE14038>

Furnitubes. (2016). *Concrete seating*.  
[https://cms.esi.info/Media/documents/22989\\_1480933710613.pdf](https://cms.esi.info/Media/documents/22989_1480933710613.pdf)

- Gaikwad, A., & Shinde, K. (2019). Use of parks by older persons and perceived health benefits: A developing country context. *Cities*, 84, 134-142. <https://doi.org/10.1016/j.cities.2018.08.001>
- Galloway, A. (2005). Non-probability sampling. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (pp. 859-864). Elsevier. <https://www.sciencedirect.com/science/article/pii/B0123693985003820>
- Garst, B. A., Williams, D. R., & Roggenbuck, J. W. (2009). Exploring early twenty-first century developed forest camping experiences and meanings. *Leisure Sciences*, 32(1), 90-107. <https://doi.org/10.1080/01490400903430905>
- Gatalska, N., & Oleksiichenko, N. (2019). Methodological approaches to assess the aesthetics of park environment. *Forestry Ideas*, 24(2), 141-162.
- Gehl, J. (1987). *Life between buildings: Using public space*. Reinhold.
- Gehl, J. (2010). *Cities for people*. Island press.
- Gemici, R. Ö. (2019). Evaluation of Japanese Kyoto Park in terms of user satisfaction. *International Journal of Urban and Civil Engineering*, 13(8), 488-493. <https://doi.org/10.5281/zenodo.3455653>
- Ghani, N., Mansor, M., & Zakariya, K. (2018). Gen z's activities and needs for urban recreational parks. *Journal of the Malaysian Institute of Planners*, 16(2), 141-152. <https://doi.org/10.21837/pmjjournal.v16.i6.469>
- Gibson, I. (2016, April 29). *Predictors of litter pollution in suburban parks*. University of Connecticut. [https://opencommons.uconn.edu/cgi/viewcontent.cgi?article=1483&context=srhonors\\_theses&httpsredir=1&referer=](https://opencommons.uconn.edu/cgi/viewcontent.cgi?article=1483&context=srhonors_theses&httpsredir=1&referer=)
- Gobster, P. H. (1995). Perception and use of a metropolitan greenway system for recreation. *Landscape and Urban Planning*, 33(1), 401-413. [https://doi.org/10.1016/0169-2046\(94\)02031-A](https://doi.org/10.1016/0169-2046(94)02031-A)
- Gobster, P. H. (2002). Managing urban parks for a racially and ethnically diverse clientele. *Leisure Sciences*, 24(2), 143-159. <https://doi.org/10.1080/01490400252900121>
- Goh, H., & Rosilawati, Z. (2014). Conservation education in Kinabalu park, Malaysia: Analysis of visitors' satisfaction. *Journal of Tropical Forest Science*, 26(2), 208-217. <https://www.frim.gov.my/v1/JTFSONline/jtfs/v26n2/208-217.pdf>
- Goh, H. C., & Mahmood, N. (2016). The user's perceptions of Perdana Botanical Garden in Kuala Lumpur. *Journal of Design and Built Environment* 16(1), 27-36. <https://doi.org/10.22452/jdbe.vol16no1.3>
- Gold, S. M. (1977). Neighborhood parks: The nonuse phenomenon. *Evaluation Quarterly*, 1(2), 319-328. <https://doi.org/10.1177/0193841X7700100205>

- Gong, L., Mao, B., Qi, Y., & Xu, C. (2015). A satisfaction analysis of the infrastructure of country parks in Beijing. *Urban Forestry & Urban Greening*, 14(3), 480-489. <https://doi.org/10.1016/j.ufug.2015.04.013>
- Goodarzi, M., & Haghtalab, N. (2016). Providing empirical suggestions for rehabilitation of deficient urban parks based upon users' preferences *International Journal of Architecture and Urban Development*, 6(1), 65-72.
- Goodwin, N. C. (1987). Functionality and usability. *Communications of the Association for Computing Machinery*, 30(3), 229-233. <https://doi.org/10.1145/214748.214758>
- Government of Punjab. (2017). *Park maintenace policy*. Retrieved from <https://mcjalandhar.in/wp-content/uploads/2018/12/Park-Maintenance-Policy.pdf>
- Graefe, A., Absher, J., & Burns, R. (2000). Monitoring visitor satisfaction: A comparison of comment cards and more in-depth surveys. G. Kyle (Ed.), *Proceedings of the 2000 Northeastern Recreation Research Symposium*, 276, 265-269. United States Department of Agriculture.
- Güngör, S., Demir, M., & Polat, A. T. (2016). A research on accessibility of urban parks by disabled users. *International Journal of Research in Social Sciences*, 6(12), 578-594. [https://www.researchgate.net/profile/Sertac-Guengoer/publication/303996663\\_A\\_Research\\_on\\_Accessibility\\_of\\_Urban\\_Parks\\_by\\_Disabled\\_Users/links/57626f4208aeada5bc51258/A-Research-on-Accessibility-of-Urban-Parks-by-Disabled-Users.pdf](https://www.researchgate.net/profile/Sertac-Guengoer/publication/303996663_A_Research_on_Accessibility_of_Urban_Parks_by_Disabled_Users/links/57626f4208aeada5bc51258/A-Research-on-Accessibility-of-Urban-Parks-by-Disabled-Users.pdf)
- Güngör, S., & Polat, A. T. (2017). The evaluation of the urban parks in Konya province in terms of quality, sufficiency, maintenance, and growth rate. *Environmental Monitoring and Assessment*, 189(4), 172-182. <https://doi.org/10.1007/s10661-017-5875-9>
- Güngör, S., & Polat, A. T. (2018). Relationship between visual quality and landscape characteristics in urban parks. *Journal of Environmental Protection and Ecology*, 19(2), 939-948.
- Gürer, N., & Uğurlar, A. (2017). User satisfaction in urban parks: Ankara Kugulu Park case. *Megaron*, 12(3), 443-459. <https://doi.org/10.5505/megaron.2017.76094>
- Gursoy, D., & Chen, B. T. (2012). Factors influencing camping behavior: The case of Taiwan. *Journal of Hospitality Marketing & Management*, 21(6), 659-678. <https://doi.org/10.1080/19368623.2012.627239>
- Gustavsson, R., Hermy, M., Konijnendijk, C., & Steidle-Schwahn, A. (2005). Management of urban woodland and parks - Searching for creative and sustainable concepts. In C. Konijnendijk, K. Nilsson, T. Randrup, & J. Schipperijn (Eds.), *Urban forests and trees: A reference book* (pp. 369-397). Springer Berlin Heidelberg. [https://doi.org/10.1007/3-540-27684-X\\_14](https://doi.org/10.1007/3-540-27684-X_14)

- Hadavi, S., Kaplan, R., & Hunter, M. C. R. (2015). Environmental affordances: A practical approach for design of nearby outdoor settings in urban residential areas. *Landscape and Urban Planning*, 134, 19-32. <https://doi.org/10.1016/j.landurbplan.2014.10.001>
- Halkos, G., Leonti, A., & Sardianou, E. (2021). Activities, motivations and satisfaction of urban parks visitors: A structural equation modeling analysis. *Economic Analysis and Policy*, 70, 502-513. <https://doi.org/10.1016/j.eap.2021.04.005>
- Hall, E. T. (1969). *The hidden dimension*. Bantam Doubleday Dell Publishing Group, Inc.
- Hami, A., Maulan, S. B., Mariapan, M., & Habib, S. (2011). User's preferences of usability and sustainability of old urban park in Tabriz, Iran. *Australian Journal of Basic and Applied Sciences*, 5(11), 1899-1905. <https://www.ajbasweb.com/old/ajbas/2011/November-2011/1899-1905.pdf>
- Hamilton, J. A., & Crompton, J. L. (1991). Identifying the dimensions of service quality in a park context. *Journal of Environmental Management*, 32(3), 211-220. [https://doi.org/10.1016/S0301-4797\(05\)80052-0](https://doi.org/10.1016/S0301-4797(05)80052-0)
- Hamilton, K., Kaczynski, A. T., Fair, M. L., & Lévesque, L. (2017). Examining the relationship between park neighborhoods, features, cleanliness, and condition with observed weekday park usage and physical activity: A case study. *Journal of Environmental and Public Health*, 2017(7582402), 1-11. <https://doi.org/10.1155/2017/7582402>
- Harerimana, A., Wicking, K., Biedermann, N., & Yates, K. (2024). Preparing for data collection: The mock interview as a researcher's training tool. *Educational Research*, 66(1), 68-85. <https://doi.org/10.1080/00131881.2024.2302156>
- Harjanti, I. M. (2020). Identification of urban park quality in Taman Indonesia Kaya, Semarang. *Journal of Architectural Design and Urbanism*, 2(2), 1-14. <https://doi.org/https://10.14710/jadu.v2i2.7001>
- Harper, R. (2017). *The best management practices: Tree pruning*. United States Department of Conservation and Recreation. Retrieved from <https://www.mass.gov/doc/citizen-forester-april-2017/download>
- Hartig, T., & Evans, G. W. (1993). Psychological foundations of nature experience. In T. Gärling & R. G. Golledge (Eds.), *Advances in psychology* (Vol. 96, pp. 427-457). North-Holland. [https://doi.org/10.1016/S0166-4115\(08\)60053-9](https://doi.org/10.1016/S0166-4115(08)60053-9)
- Harty, E. (2008). *The complete guide to horse care*. Humane World for Animals. [https://www.humanesociety.org/sites/default/files/docs/HSUS\\_complete-guide-to-horse-care.pdf](https://www.humanesociety.org/sites/default/files/docs/HSUS_complete-guide-to-horse-care.pdf)
- Hasan-Basri, B., & Abd Karim, M. Z. (2016). Can benefits in recreational parks in Malaysia be transferred? A Choice Experiment (CE) technique. *International Journal of Tourism Research*, 18(1), 19-26. <https://doi.org/10.1002/jtr.2028>

- Hashim, N. H. M., Thani, S. K. S. O., Jamaludin, M. A., & Yatim, N. M. (2016). A perceptual study on the influence of vegetation design towards women's safety in public park. *Procedia - Social and Behavioral Sciences*, 234, 280-288. <https://doi.org/10.1016/j.sbspro.2016.10.244>
- Hawthorn, D., Kirik, M., & Eagles, P. F. J. (2000). Evaluating management effectiveness of parks and park systems: A proposed methodology. *Proceedings of the Fourth International Conference on Science and Management of Protected Areas*, 1-32. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=8edcd01856111f810d1cc74ce669dabf6bb24e93>
- Hedblom, M., Lindberg, F., Vogel, E., Wissman, J., & Ahrné, K. (2017). Estimating urban lawn cover in space and time: Case studies in three Swedish cities. *Urban Ecosystems*, 20(5), 1109-1119. <https://doi.org/10.1007/s11252-017-0658-1>
- Hegetschweiler, K. T., Rusterholz, H.-P., & Baur, B. (2007). Fire place preferences of forest visitors in northwestern Switzerland: Implications for the management of picnic sites. *Urban Forestry & Urban Greening*, 6(2), 73-81. <https://doi.org/10.1016/j.ufug.2007.03.001>
- Herrick, T. A., & McDonald, C. D. (1992). Factors affecting overall satisfaction with a river recreation experience. *Environmental Management*, 16(2), 243-247. <https://doi.org/https://10.1007/BF02393829>
- Hidalgo, M. C., & Hernández, B. (2001). Place attachment: Conceptual and empirical questions. *Journal of Environmental Psychology*, 21(3), 273-281. <https://doi.org/10.1006/jevp.2001.0221>
- Hilborn, J. (2009). *Dealing with crime and disorder in urban parks*. Arizona State University. Retrieved from [https://popcenter.asu.edu/sites/default/files/dealing\\_with\\_crime\\_and\\_disorder\\_in\\_urban\\_parks.pdf](https://popcenter.asu.edu/sites/default/files/dealing_with_crime_and_disorder_in_urban_parks.pdf)
- Hodge, D. R., & Gillespie, D. F. (2005). Phrase completion scales. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (pp. 53-62). Elsevier. <https://doi.org/10.1016/B0-12-369398-5/00124-9>
- Howat, G., Absher, J., Crilley, G., & Milne, I. (1996). Measuring customer service quality in sports and leisure centres. *Managing Leisure*, 1(2), 77-89. <https://doi.org/10.1080/136067196376456>
- Huang, L. S. C. (2006). A study of outdoor interactional spaces in high-rise housing. *Landscape and Urban Planning*, 78(3), 193-204. <https://doi.org/10.1016/j.landurbplan.2005.07.008>
- Huang, T. C. (2019). Urban Parks: Satisfaction evaluation model of city infrastructure service. *Management Review*, 38(3), 109-125. [https://doi.org/10.6656/MR.201907\\_38\(3\).ENG109](https://doi.org/10.6656/MR.201907_38(3).ENG109)



- Huang, T. Y., & Huang, C. (2019). Study on the preferences of senior citizens in urban park public facilities. *International Journal of Social Sciences*, 5(1), 938-951. <https://doi.org/10.20319/pijss.2019.51.938951>
- Hurd, A. R., & Anderson, D. M. (2011). *The park and recreation professional's handbook*. Human Kinetics.
- Hussain, N., Kamal, M. S. M., & Krisantia, I. (2009). User's satisfaction: Towards sustainable of local parks in Kuala Lumpur, Malaysia. *Jurnal Arsitektur Lansekap*, 2(2), 128-129.
- Hussein, M. K. (2014a). Recreational forest landscape maintenance: An observation on selected recreational forest sites in Hungary. *The 2014 West East Institute International Academic Conference Proceedings*, 146-162. <https://www.westeastinstitute.com/wp-content/uploads/2014/07/Mohd-Kher-Husseina.pdf>
- Hussein, M. K. (2014b). Users' perception towards selected recreational forest landscape maintenance in Selangor Darul Ehsan, Malaysia. *Pertanika Journal of Social Science and Humanities*, 22(4), 969-983. [http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2022%20\(4\)%20Dec.%202014/03%20Page%20969-984%20\(JSSH%200821-2013\).pdf](http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2022%20(4)%20Dec.%202014/03%20Page%20969-984%20(JSSH%200821-2013).pdf)
- Hussein, M. K. (2018). A comparison of gender preference for tropical recreational rain forest in Malaysia. *Alam Cipta*, 11(1), 29-36. [http://psasir.upm.edu.my/id/eprint/64501/1/20180626094714Article\\_05\\_pg\\_29-36.pdf](http://psasir.upm.edu.my/id/eprint/64501/1/20180626094714Article_05_pg_29-36.pdf)
- Hwang, Y. H. (2015). *Sustainable landscape*. Singapore National Parks Board. <https://www.nparks.gov.sg/-/media/cuge/ebook/sustainable-landscape/sustainable-landscape.pdf>
- Ibes, D. C. (2015). A multi-dimensional classification and equity analysis of an urban park system: A novel methodology and case study application. *Landscape and Urban Planning*, 137, 122-137. <https://doi.org/10.1016/j.landurbplan.2014.12.014>
- Ibrahim, J. (2024 February 24). Experts: Public park push requires proper maintenance. *The Star*. <https://www.thestar.com.my/news/nation/2024/02/24/experts-public-park-push-requires-proper-maintenance>
- Ibrahim, R. (2016). *Towards a sustainable landscape of urban parks in Kuala Lumpur, Malaysia: A study from a management perspective* [Doctoral dissertation, University of Sheffield]. White Rose eTheses Online. <https://etheses.whiterose.ac.uk/13641/1/ThesisFinalSubmission.pdf>
- Ibrahim, R., Clayden, A., & Cameron, R. (2020). Tropical urban parks in Kuala Lumpur, Malaysia: Challenging the attitudes of park management teams towards a more environmentally sustainable approach. *Urban Forestry & Urban Greening*, 49, 126605. <https://doi.org/10.1016/j.ufug.2020.126605>

- Ignatieva, Eriksson, F., Eriksson, T., Berg, P., & Hedblom, M. (2017). The lawn as a social and cultural phenomenon in Sweden. *Urban Forestry and Urban Greening*, 21, 213-223. <https://doi.org/10.1016/j.ufug.2016.12.006>
- Ignatieva, M., & Ahrné, K. (2013). Biodiverse green infrastructure for the 21st century: from “green desert” of lawns to biophilic cities. *Journal of Architecture and Urbanism*, 37(1), 1-9. <https://doi.org/10.3846/20297955.2013.786284>
- Ignatieva, M., Ahrné, K., Wissman, J., Eriksson, T., Tidåker, P., Hedblom, M., Kätterer, T., Marstorp, H., Berg, P., Eriksson, T., & Bengtsson, J. (2015). Lawn as a cultural and ecological phenomenon: A conceptual framework for transdisciplinary research. *Urban Forestry & Urban Greening*, 14(2), 383-387. <https://doi.org/10.1016/j.ufug.2015.04.003>
- Insporthline. (n.d.). *User manual – EN IN 6849 table tennis table sportline pinton*. [https://www.insportline.eu/upload/file/6849\\_Table\\_Tennis\\_Table\\_inSPORTline\\_Pinton\\_EN\\_01.pdf](https://www.insportline.eu/upload/file/6849_Table_Tennis_Table_inSPORTline_Pinton_EN_01.pdf)
- International Olympic Committee. (2021). *Futsal: A whole different ball game*. <https://olympics.com/en/news/futsal-a-whole-different-ball-game>
- International Society of Arboriculture (ISA). (2011). *Why hire an arborist?* <https://www.aidic.it/cet/18/63/065.pdf>
- Ishak, S. A., Jamaludin, A. A., & Hussein, H. (2022). User's experience of neighbourhood parks in Taman Tun Dr Ismail and Bandar Tun Razak, Kuala Lumpur. *Open House International*, 47(1), 36-50. <https://doi.org/10.1108/OHI-06-2020-0058>
- Ishii-Kuntz, M. (1990). Social interaction and psychological well-being: Comparison across stages of adulthood. *The International Journal of Aging and Human Development*, 30(1), 15-36. <https://doi.org/10.2190/0WTY-XBXJ-GVV9-XWM9>
- Işıl Çakıcı Kaymaz, Nevin Akpınar, & Nur Belkayalı. (2012, 11-15 July 2012). *User perception of soundscape of urban park in Ankara* [Paper presentation]. Association of European Schools of Planning 26th Annual Congress, Łódź, Poland.
- Islamic Tourism Centre of Malaysia (ITC). *Prayer time*. <https://itc.gov.my/tourists/discover-the-muslim-friendly-malaysia/prayer-time/>
- Ismail, A. S., Mohidin, H. H. B., & Sani, M. S. M. (2017). The effectiveness of public park management and design for sustainable livelihood in Malaysian context. *Advanced Science Letters*, 23(9), 8402-8407. <https://doi.org/10.1166/asl.2017.9899>
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3-20. <https://doi.org/10.1177/1525822X05282260>
- Jaafar, N., & Tudin, R. (2010). Uparqual: The development of an urban park satisfaction measurement scale. *International Journal of Business and Society*, 11(2), 17-34.

- Jabatan Kemajuan Islam Malaysia (JAKIM). (2020). *Langkah-langkah mengambil wuduk*. <https://www.e-solat.gov.my/index.php?siteId=26&pageId=17>
- Jahani, A., Allahverdi, S., Saffariha, M., Alitavoli, A., & Ghiyasi, S. (2022). Environmental modeling of landscape aesthetic value in natural urban parks using artificial neural network technique. *Modeling Earth Systems and Environment*, 8(1), 163-172. <https://doi.org/10.1007/s40808-020-01068-2>
- Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of basic and clinical pharmacy*, 5(4), 87-88. <https://doi.org/10.4103/0976-0105.141942>
- Janiskee, R. L. (1990). Resort camping in America. *Annals of Tourism Research*, 17(3), 385-407. [https://doi.org/10.1016/0160-7383\(90\)90005-C](https://doi.org/10.1016/0160-7383(90)90005-C)
- Jansson, A. K., Lubans, D. R., Smith, J. J., Duncan, M. J., Haslam, R., & Plotnikoff, R. C. (2019). A systematic review of outdoor gym use: Current evidence and future directions. *Journal of Science and Medicine in Sport*, 22(12), 1335-1343. <https://doi.org/10.1016/j.jsams.2019.08.003>
- Jastifer, J. R., McNitt, A. S., Mack, C. D., Kent, R. W., McCullough, K. A., Coughlin, M. J., & Anderson, R. B. (2019). Synthetic turf: History, design, maintenance, and athlete safety. *Sports Health*, 11(1), 84-90. <https://doi.org/10.1177/1941738118793378>
- Javed, A., Naeem, M. A., Waheed, A., & Vohra, I. A. (2015). Visitors' perception of outdoor recreational facilities in Murree City, Pakistan. *Greater Mekong Subregion Academic and Research Network (GMSARN) International Journal*, 9, 125-136. <https://gmsarnjournal.com/home/wp-content/uploads/2016/02/Vol9No4-2.pdf>
- Jibril, D. J., & Elfartas, H. (2018). Contextual predictors of urban park utilisation among Malaysian ethnic groups. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 9(3), 197-209. <https://doi.org/10.14456/ITJEMAST.2018.1x>
- Jo, T. D., Kim, M. J., & Sin, B. C. (2005). Analysis of visitor's satisfaction on camp site in national park - Focused on Sorakdong district in Mount Sorak National Park. *Journal of the Environmental Sciences*, 14(5), 547-461. <https://doi.org/10.5322/jes.2005.14.5.457>
- Johnson, M. N. P., & McLean, E. (2020). Discourse analysis. In A. Kobayashi (Ed.), *International encyclopedia of human geography* (2 ed., pp. 377-383). Elsevier. <https://doi.org/10.1016/B978-0-08-102295-5.10814-5>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133. <https://doi.org/10.1177/1558689806298224>
- Juahir, H., Ghazali, A., Ismail, A., Mohamad, M., Hamzah, F. M., Sudianto, S., Mohd Lasim, M. L., & Shahriz, M. A. (2018). The assessment of Danau Kota Lake water quality using chemometrics approach. *IOP Conference Series: Materials Science and Engineering*, 621, 012019. <https://doi.org/10.1088/1757-899X/621/1/012019>

- Jung, C., Al Qassimi, N., Arar, M., & Awad, J. (2022). The improvement of user satisfaction for two urban parks in Dubai, UAE : Bay Avenue Park and Al Ittihad Park. *Sustainability*, 14(6), 3460-3482. <https://doi.org/10.3390/su14063460>
- Jung, J. Y., & Hong, S. (2008). Organizational citizenship behaviour (OCB), TQM and performance at the maquiladora. *International Journal of Quality & Reliability Management*, 25(8), 793-808. <https://doi.org/10.1108/02656710810898612>
- Jung, Y. J., & Chae, S. D. (2019). Analysis of usage behavior and preference in senior-friendly parks for the aging society. *Journal of People, Plants and Environment*, 22(6), 665-676. <https://doi.org/10.11628/ksppe.2019.22.6.665>
- Kabisch, N., Kraemer, R., Masztalerz, O., Hemmerling, J., Püffel, C., & Haase, D. (2021). Impact of summer heat on urban park visitation, perceived health and ecosystem service appreciation. *Urban Forestry & Urban Greening*, 60, 127058. <https://doi.org/10.1016/j.ufug.2021.127058>
- Kaklauskas, A., & Gudauskas, R. (2016). Intelligent decision-support systems and the Internet of Things for the smart built environment. In F. Pacheco-Torgal, E. Rasmussen, C.-G. Granqvist, V. Ivanov, A. Kaklauskas, & S. Makonin (Eds.), *Start-up creation* (pp. 413-449). Woodhead Publishing. <https://doi.org/10.1016/B978-0-08-100546-0.00017-0>
- Kangar Municipal Council. (2021). *Rekreasi*. <https://www.mpkangar.gov.my/ms/laman/rekreasi>
- Kansas State University. (2018). *Beating your lawn*. <https://bookstore.ksre.ksu.edu/pubs/mf2130.pdf>
- Kaplan, R. (1983). The role of nature in the urban context. In I. Altman & J. F. Wohlwill (Eds.), *Behavior and the natural environment* (pp. 127-161). Springer US. [https://doi.org/10.1007/978-1-4613-3539-9\\_5](https://doi.org/10.1007/978-1-4613-3539-9_5)
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3), 169-182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)
- Karuppannan, S., & Sivam, A. (2013). Comparative analysis of utilisation of open space at neighbourhood level in three Asian cities: Singapore, Delhi and Kuala Lumpur. *Urban Design International*, 18(2), 145-164. <https://doi.org/10.1057/udi.2012.34>
- Kayarchy. (2024). *Repair, storage & maintenance*. <https://www.kayarchy.co.uk/html/01equipment/027repairing.htm>
- Kaymaz, I. C. (2012). Landscape perception. In M. Ozyavuz (Ed.), *Landscape planning* (pp. 251-276). IntechOpen Limited. <https://doi.org/10.5772/38998>
- Kemperman, A. D. A. M., & Timmermans, H. J. P. (2006). Heterogeneity in urban park use of aging visitors: A latent class analysis. *Leisure Sciences*, 28(1), 57-71. <https://doi.org/10.1080/01490400500332710>

- Kendle, T., & Forbes, S. (1997). *Urban nature conservation: Landscape management in the urban countryside* (1st ed.). Taylor & Francis. <https://doi.org/10.4324/9780203857021>
- Kent State Univeristy. (2022). *Pearson correlation*. <https://libguides.library.kent.edu/spss/pearsoncorr>
- Khair, E. (2021, September 16). Aspek keselamatan taman rekreasi perlu dipertingkatkan. *Astro Awani*. <https://www.astroawani.com/berita-malaysia/aspek-keselamatan-taman-rekreasi-perlu-dipertingkatkan-319922>
- Kim, J. H., Choi, W. J., & Yoon, Y. H. (2018). An empirical analysis on the application of crime prevention through environmental design (CPTED) in urban park area - Targeting to the Yangjae citizen's forest on Seochogu, Seoul. *Journal of Poeples Plants Environment*, 21(1), 51-62. <https://doi.org/10.11628/ksppe.2018.21.1.051>
- Kimic, K., & Polko, P. (2022). The use of urban parks by older adults in the context of perceived security. *International Journal of Environmental Research and public Health*, 19, 4184-4204. <https://doi.org/10.3390/ijerph19074184>
- King, A. C., Castro, C., Wilcox, S., Eyler, A. A., Sallis, J. F., & Brownson, R. C. (2000). Personal and environmental factors associated with physical inactivity among different racial-ethnic groups of U.S. middle-aged and older-aged women. *Health Psychology*, 19(4), 354-364. <https://doi.org/10.1037//0278-6133.19.4.354>
- King County Park. (2011). *Customer satisfaction survey*. [https://aqua.kingcounty.gov/dnrp/library/parks-and-recreation/documents/task\\_force/background\\_materials/KCP\\_SurveyResults\\_SiteStory\\_FINAL\\_12.30.2011.pdf](https://aqua.kingcounty.gov/dnrp/library/parks-and-recreation/documents/task_force/background_materials/KCP_SurveyResults_SiteStory_FINAL_12.30.2011.pdf)
- Klang Royal City Council. (2013). *Garispanduan penyelenggaraan landskap dan taman awam*. <https://gesweb.mpklang.gov.my/portal/sharing/rest/content/items/98664a4f4d384dd69d0f010e487dde65/data>
- Knopf, R. C. (1983). Recreational needs and behavior in natural settings. In I. Altman & J. F. Wohlwill (Eds.), *Behavior and the natural Environment* (pp. 205-240). Springer US. [https://doi.org/10.1007/978-1-4613-3539-9\\_7](https://doi.org/10.1007/978-1-4613-3539-9_7)
- Koh, H. L., Tan, W. K., Teh, S. Y., & Tay, C. J. (2019). Water quality simulation for rehabilitation of a eutrophic lake in Selangor, Malaysia. *IOP Conference Series: Earth and Environmental Science*, 380, 012006. <https://doi.org/10.1088/1755-1315/380/1/012006>
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International (P) Limited.
- Kraft, M. E., & Furlong, S. R. (2015). *Public policy: Politics, analysis, and alternatives* (5th ed.). SAGE Publications. [https://nls.ldls.org.uk/welcome.html?ark:/81055/vdc\\_100048659647.0x000001](https://nls.ldls.org.uk/welcome.html?ark:/81055/vdc_100048659647.0x000001)

- Krajter Ostoić, S., Konijnendijk van den Bosch, C. C., Vuletić, D., Stevanov, M., Živojinović, I., Mutabdžija-Bećirović, S., Lazarević, J., Stojanova, B., Blagojević, D., Stojanovska, M., Nevenić, R., & Pezdevšek Malovrh, Š. (2017). Citizens' perception of and satisfaction with urban forests and green space: Results from selected Southeast European cities. *Urban Forestry & Urban Greening*, 23, 93-103. <https://doi.org/10.1016/j.ufug.2017.02.005>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610. <https://doi.org/10.1177/001316447003000308>
- Krenichyn, K. (2006). 'The only place to go and be in the city': Women talk about exercise, being outdoors, and the meanings of a large urban park. *Health & Place*, 12(4), 631-643. <https://doi.org/10.1016/j.healthplace.2005.08.015>
- Kuala Lumpur City Hall (KLCH). (2021). *Senarai taman-taman awam di Kuala Lumpur*. <https://www.dbkl.gov.my/en/perkhidmatan/kemudahan-awam/taman-taman-awam/>
- Kulczyk, S., Woźniak, E., & Derek, M. (2018). Landscape, facilities and visitors: An integrated model of recreational ecosystem services. *Ecosystem Services*, 31, 491-501. <https://doi.org/10.1016/j.ecoser.2018.02.016>
- Kumar, A. (2014). Access to basic amenities: Aspects of caste, ethnicity and poverty in rural and urban India - 1993 to 2008–2009. *Journal of Land and Rural Studies*, 2(1), 127-148. <https://doi.org/10.1177/2321024913515113>
- Kumar, R. (2011). *Research methodology a step-by-step guide for beginners* (3rd ed.). SAGE Publications Ltd.
- Kumar, R. (2018). *Research methodology a step-by-step guide for beginners* (5th ed.). SAGE Publications Inc.
- Kuo, F. E., Bacaicoa, M., & Sullivan, W. C. (1998). Transforming inner-city landscapes: Trees, sense of safety, and preference. *Environment and Behavior*, 30(1), 28-59. <https://doi.org/10.1177/0013916598301002>
- Kurzi, N. S., & Schroth, O. (2018). Maintenance and personal safety in neighborhood parks: A literature and case study of MPSJ. *Asian Journal of Quality of Life*, 3(13), 107-116. <https://doi.org/10.21834/ajqol.v3i13.167>
- Kwon, Y. S., Lee, B. K., & Sohn, S. Y. (2020). Optimal location-allocation model for the installation of rooftop sports facilities in metropolitan areas. *European Sport Management Quarterly*, 20(2), 189-204. <https://doi.org/10.1080/16184742.2019.1598454>
- Landau, S., & Everitt, B. S. (2004). *A handbook of statistical analyses using SPSS*. Chapman & Hall/CRC Press LLC.
- Landschoot, P. *Managing thatch in lawns*. Penn State Extension. <https://extension.psu.edu/managing-thatch-in-lawns>

- Lapa, T. Y. (2013). Life satisfaction, leisure satisfaction and perceived freedom of park recreation participants. *Procedia - Social and Behavioral Sciences*, 93, 1985-1993. <https://doi.org/10.1016/j.sbspro.2013.10.153>
- Larabee, R. V. *Organizing your social sciences research paper*. University of Southern California. <https://libguides.usc.edu/writingguide/literaturereview>
- Lee, H. H. Y., & Scott, D. (2009). Overview of maintenance strategy, acceptable maintenance standard and resources from a building maintenance operation perspective. *Journal of Building Appraisal*, 4(4), 269-278. <https://doi.org/10.1057/jba.2008.46>
- Lee, H. S., Shepley, M., & Huang, C. S. (2009). Evaluation of off-leash dog parks in Texas and Florida: A study of use patterns, user satisfaction, and perception. *Landscape and Urban Planning*, 92(3), 314-324. <https://doi.org/10.1016/j.landurbplan.2009.05.015>
- Lee, H. Y., Tseng, H. H., Zheng, M. C., & Li, P. Y. (2010). Decision support for the maintenance management of green areas. *Expert Systems with Applications*, 37(6), 4479-4487. <https://doi.org/10.1016/j.eswa.2009.12.063>
- Lee, I. H., Kang, H. K., & Back, S. J. (2018). User satisfaction and preference for activation of ecological playgrounds. *Journal of People, Plants and Environment*, 21(1), 37-50. <https://doi.org/10.11628/ksppe.2018.21.1.037>
- Lee, J. L. C., Lo, T. L. T., & Ho, R. T. H. (2018). Understanding outdoor gyms in public open spaces: A systematic review and integrative synthesis of qualitative and quantitative evidence. *International Journal of Environmental Research and Public Health*, 15(4), 590-604. <https://doi.org/10.3390/ijerph15040590>
- Lee, X. H., Yang, J. T., Chang, J. H., Chien, W. T., Lo, Y. C., Lin, C. C., & Sun, C. C. (2015). An LED-based luminaire for badminton court illumination. *Lighting Research & Technology*, 49(3), 396-406. <https://doi.org/10.1177/1477153515610800>
- Lee, Y. C., & Kim, K. H. (2015). Attitudes of citizens towards urban parks and green spaces for urban sustainability: The case of Gyeongsan City, Republic of Korea. *Sustainability* 7(7), 8240-8254. <https://doi.org/10.3390/su7078240>
- Leverette, M. M. (2020). *The best gazebos for your outdoor space*. Business Insider. <https://www.businessinsider.com/best-gazebo>
- Levinger, P., Sales, M., Polman, R., Haines, T., Dow, B., Biddle, S., Duque, G., & Hill, K. (2018). Outdoor physical activity for older people-the senior exercise park: Current research, challenges and future directions. *Journal of Australian Association of Health Promotion Professionals*, 29(3), 353-359. <https://doi.org/10.1002/hpja.60>
- Levy, M. R. (2009). *Visual perception and gestalt grouping in the landscape: Are gestalt grouping principles reliable indicators of visual preference?* [Master's thesis, Mississippi State University]. ProQuest Dissertations and Theses Global. <https://pqdtopen.proquest.com/doc/304940807.html?FMT=AI>

- Lim, I. (2020, October 18). Annuar Musa: Public parks in Federal Territories can open during CMCO now, just like gyms, golf courses. *Malay Mail*. <https://www.malaymail.com/news/malaysia/2020/10/18/annuar-musa-public-parks-in-federal-territories-can-open-during-cmco-now-ju/1913864>
- Lindgren, T. (2010). *Green space management & residents' benefits - A study of Swedish rental multi-family housing area* [Doctoral dissertation, Swedish University of Agricultural Sciences ]. SLU Publication Database. <https://res.slu.se/id/publ/31403>
- Ling, O. H. L., Siti Nazurah Salehudin, Marzukhi, M. A., & Kwong, Q. J. (2021). The quality of life among visitors of recreational parks: A case study of recreational parks in Temerloh Town, Pahang, Malaysia. *Malaysian Journal of Society and Space*, 17(1), 94-106. <https://doi.org/10.17576/geo-2021-1701-08>
- Lis, A., Pardela, Ł., & Iwankowski, P. (2019). Impact of vegetation on perceived safety and preference in city parks. *Sustainability*, 11(22), 6324. <https://doi.org/10.3390/su11226324>
- Liu, B., Chen, Y., & Xiao, M. (2020). The social utility and health benefits for older adults of amenity buildings in China's urban parks: A Nanjing case study. *International Journal of Environmental Research and Public Health*, 17(20), 7497. <https://doi.org/10.3390/ijerph17207497>
- Liu, R., & Xiao, J. (2020). Factors affecting users' satisfaction with urban parks through online comments data: Evidence from Shenzhen, China. *International Journal of Environmental Research and Public Health*, 18(1), 253-274. <https://doi.org/10.3390/ijerph18010253>
- Lopez, B. (2024, March 26). Vital to maintain parks. *New Straits Times*. [https://www.nst.com.my/opinion/letters/2024/03/1030451/vital-maintain-parks#google\\_vignette](https://www.nst.com.my/opinion/letters/2024/03/1030451/vital-maintain-parks#google_vignette)
- Loukaitou-Sideris, A., Levy-Storms, L., Chen, L., & Brozen, M. (2016). Parks for an aging population: Needs and preferences of low-income seniors in Los Angeles. *Journal of the American Planning Association*, 82(3), 236-251. <https://doi.org/10.1080/01944363.2016.1163238>
- Luximon, Y., Kwong, H. Y., & Tai, Y. Y. (2015). User preferences of urban park seating pattern in Hong Kong. *Procedia Manufacturing*, 3, 4273-4278. <https://doi.org/10.1016/j.promfg.2015.07.415>
- Lynch, K. (1960). *The image of the city*. MIT Press. [https://www.miguelangelmartinez.net/IMG/pdf/1960\\_Kevin\\_Lynch\\_The\\_Image\\_of\\_The\\_City\\_book.pdf](https://www.miguelangelmartinez.net/IMG/pdf/1960_Kevin_Lynch_The_Image_of_The_City_book.pdf)
- Ma, B., Hauer, R., & Xu, C. (2020). Effects of design proportion and distribution of color in urban and suburban green space planning to visual aesthetics quality. *Forests*, 11(3), 278. <https://doi.org/10.3390/f11030278>



- Ma, K., & Jiang, B. (2020). Voice of urban park visitors: exploring destination attributes influencing behavioural intentions through online review mining. *Complex & Intelligent Systems*, 9, 2571–2583. <https://doi.org/10.1007/s40747-020-00223-7>
- Maas, K. *ACA Pro School Feature: Canyon River Instruction*. American Canoe Association. <https://americancanoe.org/wp-content/uploads/2024/05/May-2024.pdf>
- MacKay, K. J., & Crompton, J. L. (1990). Measuring the quality of recreation services. *The Journal of Park and Recreation Administration*, 8(3), 47-56.
- Madden, D. J. (2010). Revisiting the end of public space: Assembling the public in an urban park. *City & Community*, 9(2), 187-207. <https://doi.org/10.1111/j.1540-6040.2010.01321.x>
- Mahmoud, A. H. A. (2011). Analysis of the microclimatic and human comfort conditions in an urban park in hot and arid regions. *Building and Environment*, 46(12), 2641-2656. <https://doi.org/10.1016/j.buildenv.2011.06.025>
- Mak, B. K. L., & Jim, C. Y. (2018). Examining fear-evoking factors in urban parks in Hong Kong. *Landscape and Urban Planning*, 171, 42-56. <https://doi.org/10.1016/j.landurbplan.2017.11.012>
- Mak, B. K. L., & Jim, C. Y. (2019). Linking park users' socio-demographic characteristics and visit-related preferences to improve urban parks. *Cities*, 92, 97-111. <https://doi.org/10.1016/j.cities.2019.03.008>
- Makalew, F. P., Rumbayan, R., Mantiri, H. G., & Mandang, D. Y. F. (2023). Design and construction of gazebo. *Proceedings of the 4th International Conference on Applied Science and Technology on Engineering Science (iCAST-ES 2021)*, 927-934. <https://www.scitepress.org/publishedPapers/2021/109568/pdf/index.html>
- Maland, M. M. (2012). *The return on investment of parks and open space: How economics can inform design* [Master's thesis, University of Georgia]. Dissertations and Theses at UGA. [https://getd.libs.uga.edu/pdfs/maland\\_myles\\_m\\_201208\\_mla.pdf](https://getd.libs.uga.edu/pdfs/maland_myles_m_201208_mla.pdf)
- Malaysia Tourism Promotion Board (MTPB). (2024). *KL's best parks for a relaxing day out*. <https://www.malaysia.travel/explore/kl-s-best-parks-for-a-relaxing-day-out>
- Malaysian Institute of Road Safety Research. (2022). *Safe cycling guide*. Ministry of Transport. Retrieved from [https://www.mot.gov.my/en/Announcement/Safe%20Cycling%20Guide\\_26Jan2022.pdf](https://www.mot.gov.my/en/Announcement/Safe%20Cycling%20Guide_26Jan2022.pdf)
- Malek, N. A., & Mariapan, M. (2009). Visitors perception on vandalism and safety issues in a Malaysian urban park. *Theoretical and Empirical Researches in Urban Management*, 4(4), 93-107. <https://www.jstor.org/stable/pdf/24872620.pdf>
- Malek, N. A., Mariapan, M., & Rahman, N. I. A. A. (2015). Community participation in quality assessment for green open spaces in Malaysia. *Procedia - Social and Behavioral Sciences*, 168, 219-228. <https://doi.org/10.1016/j.sbspro.2014.10.227>

- Malek, N. A., Mariapan, M., & Shariff, M. K. M. (2012). The making of a quality neighbourhood park: A path model approach. *Procedia - Social and Behavioral Sciences*, 49, 202-214. <https://doi.org/10.1016/j.sbspro.2012.07.019>
- Malek, N. A., Mariapan, M., Shariff, M. K. M., & Aziz, A. (2011). Assessing the needs for quality neighbourhood parks. *Australian Journal of Basic and Applied Sciences*, 5(10), 743-753. <https://ajbasweb.com/old/ajbas/2011/October-2011/743-753.pdf>
- Malek, N. A., Mohammad, S. Z., & Nashar, A. (2018). Determinant factor for quality green open space assessment in Malaysia. *Journal of Design and Built Environment*, 18(2), 26-36. <https://doi.org/10.22452/jdbe.vol18no2.3>
- Malek, N. A., & Nashar, A. (2018). Measuring successfulness of Malaysian green open spaces: An assessment tool. *Theoretical and Empirical Researches in Urban Management*, 13(2), 21-37. <http://um.ase.ro/no132/2.pdf>
- Manikandan, S. (2011a). Frequency distribution. *Journal of Pharmacology & Pharmacotherapeutics*, 2(1), 54-56. <https://doi.org/10.4103/0976-500X.77120>
- Manikandan, S. (2011b). Measures of central tendency: The mean. *Journal of Pharmacology and Pharmacotherapeutics*, 2(2), 140-142. <https://doi.org/10.4103/0976-500x.81920>
- Maniruzzaman, K. M., Alqahtany, A., Abou-Korin, A., & Al-Shihri, F. S. (2021). An analysis of residents' satisfaction with attributes of urban parks in Dammam city, Saudi Arabia. *Ain Shams Engineering Journal*, 12(3), 3365-3374. <https://doi.org/10.1016/j.asej.2020.11.020>
- Mannan, K. A. (2021). The intensity of prayer room's natural lighting. *IOP Conference Series: Earth and Environmental Science*, 780(1), 012051. <https://doi.org/10.1088/1755-1315/780/1/012051>
- Manning, R. (1999). *Studies in outdoor recreation: Search and research for satisfaction* (2nd ed.). Oregon State University Press.
- Mansor, M., Zakariya, K., & Harun, N. Z. (2019). Challenges on use of recreational parks in Kuala Lumpur. *Journal of Construction in Developing Countries*, 24(1), 141-162. [http://web.usm.my/jcdc/vol24\\_1\\_2019/jcdc2019.24.1.8.pdf](http://web.usm.my/jcdc/vol24_1_2019/jcdc2019.24.1.8.pdf)
- Maravelakis, P. (2019). The use of statistics in social sciences. *Journal of Humanities and Applied Social Sciences*, 1(2), 87-97. <https://doi.org/10.1108/JHASS-08-2019-0038>
- Marcus, C. C., & Francis, C. (1998). *People places: Design guidelines for urban open space* (2nd ed.). John Wiley & Sons.
- Maricopa County Parks and Recreation. (n.d.). *Maintenance standard*. [https://www.maricopacountyparks.net/assets/1/6/Appendix\\_4.pdf](https://www.maricopacountyparks.net/assets/1/6/Appendix_4.pdf)
- Marion, J., Wimpey, J., & Lawhon, B. (2018). Conflicting messages about camping near waterbodies in wilderness: A review of the scientific basis and need for flexibility.

*International Journal of Wilderness*, 24(2). <https://ijw.org/2018-conflicting-messages-about-camping-near-waterbodies-in-wilderness/>

- Maritime and Port Authority of Singapore. (n.d.). *Safety guidelines for canoeing and kayaking*. [https://www.mpa.gov.sg/docs/mpalibraries/mpa-documents-files/oms/harbourcraft-and-pleasure-craft-regulations/licensing-of-harbour-craft-pleasure-craft/safety-guidelines-for-canoeing-and-kayaking.pdf?sfvrsn=7a8559ff\\_0](https://www.mpa.gov.sg/docs/mpalibraries/mpa-documents-files/oms/harbourcraft-and-pleasure-craft-regulations/licensing-of-harbour-craft-pleasure-craft/safety-guidelines-for-canoeing-and-kayaking.pdf?sfvrsn=7a8559ff_0)
- Marshall, T., Jang, J.-H., & Eom, B.-H. (2019). Anyang citizens' awareness of the effects of city parks on city dwellers. *Journal of Environmental Science International*, 28(12), 1183-1197. <https://doi.org/10.5322/JESI.2019.28.12.1183>
- Martin, J., & Cooper, C. D. (2005). Playground safety in South Western Sydney. *Journal of Paediatrics and Child Health*, 41(11), 587-591. <https://doi.org/10.1111/j.1440-1754.2005.00727.x>
- Martinez, P. (2022, October 3). *3 aspects to take into account for park maintenance*. Red de Arboles Foundation. <https://www.reddearboles.org/en-US/news/nwarticle/499/3/3-aspects-to-take-into-account-for-park-maintenance>
- Maruthaveeran, S., & van den Bosh, C. K. (2015). Fear of crime in urban parks – What the residents of Kuala Lumpur have to say? *Urban Forestry & Urban Greening*, 14(3), 702-713. <https://doi.org/10.1016/j.ufug.2015.05.012>
- Maryanti, M. R., Khadijah, H., & Uzair, A. M. (2016). The urban green space provision using the standards approach: Issues and challenges of its implementation in Malaysia. *Sustainable Development and Planning*, 210, 369-379. <https://doi.org/10.2495/SDP160311>
- Marzukhi, M. A., Karim, H. A., & Latfi, M. F. (2012). Evaluating the Shah Alam City council policy and Guidelines on the hierarchy of neighborhood open space. *Procedia - Social and Behavioral Sciences*, 36, 456-465. <https://doi.org/10.1016/j.sbspro.2012.03.050>
- Masrom, M. A. N., Rahim, M. H. I. A., Mohamed, S., Chen, G. K., & Yunus, R. (2015). Successful criteria for large infrastructure projects in Malaysia. *Procedia Engineering*, 125, 143-149. <https://doi.org/10.1016/j.proeng.2015.11.021>
- Maulan, S. (2002). *Seremban urban park, Malaysia: A preference study* [Unpublished master's thesis, Virginia Polytechnic Institute & State University]. Virginia, United States.
- Maulan, S. (2015). Preferences for usability at Taman Tasik Seremban, Malaysia. *Alam Cipta*, 8(1), 28-33. [https://frsb.upm.edu.my/dokumen/FKRSE1\\_artikel\\_4.pdf](https://frsb.upm.edu.my/dokumen/FKRSE1_artikel_4.pdf)
- McClelland, L. F. (1993). *Presenting nature: The historic landscape design of the National Park Service, 1916 to 1942*. United States Department of the Interior. <https://books.google.com.my/books?id=tHzE8katApMC>
- McCormack, G. R., Rock, M., Swanson, K., Burton, L., & Massolo, A. (2014). Physical activity patterns in urban neighbourhood parks: Insights from a multiple case study.

*BioMed Central Public Health*, 14(1), 962. <https://doi.org/10.1186/1471-2458-14-962>

- McCormack, G. R., Rock, M., Toohey, A. M., & Hignell, D. (2010). Characteristics of urban parks associated with park use and physical activity: A review of qualitative research. *Health & Place*, 16(4), 712-726. <https://doi.org/10.1016/j.healthplace.2010.03.003>
- McEwen, D. N. (1986). Recreation quality and the market for tent camping. *Journal of Park and Recreation Administration*, 4(2). <https://js.sagamorepub.com/jpra/article/view/1985>
- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher*, 41(9), 1002-1006. <https://doi.org/10.1080/0142159X.2018.1497149>
- Melaka Historic City Council. (2021). *Taman riadah dan rekreasi MBMB tumpuan orang ramai*. <https://www.mbmb.gov.my/en/node/925>
- Mimbs, B. P., Boley, B. B., Bowker, J. M., Woosnam, K. M., & Green, G. T. (2020). Importance-performance analysis of residents' and tourists' preferences for water-based recreation in the Southeastern United States. *Journal of Outdoor Recreation and Tourism*, 31, 100324. <https://doi.org/10.1016/j.jort.2020.100324>
- Ministry of Economy. (2020). *Public utilities*. <https://www.ekonomi.gov.my/sites/default/files/2020-08/Chapter%20XVIII%20-%20Public%20Utilities.pdf>
- Ministry of Housing and Local Government. (2021a). *General questions*. <https://jkt.kpkt.gov.my/en/SoalanLazim/Umum-JKT%26PBT>
- Ministry of Housing and Local Government. (2021b). *Kategori PBT*. <https://jkt.kpkt.gov.my/en/node/36>
- Ministry of Housing and Local Government. (2023a). *Bilangan taman awam mengikut kategori di Malaysia*. [https://archive.data.gov.my/data/ms\\_MY/dataset/bilangan-taman-awam-mengikut-kategori-di-malaysia](https://archive.data.gov.my/data/ms_MY/dataset/bilangan-taman-awam-mengikut-kategori-di-malaysia)
- Ministry of Housing and Local Government. (2023b). *Senarai taman wilayah*. [https://archive.data.gov.my/data/ms\\_MY/dataset/senarai-taman-wilayah](https://archive.data.gov.my/data/ms_MY/dataset/senarai-taman-wilayah)
- Ministry of Housing and Local Government Malaysia. (2000). *Garis panduan dan piawaian perancangan tanah lapang dan rekreasi*. Retrieved from [https://mytownnet.planmalaysia.gov.my/ver2/gp\\_versi\\_1/2000\\_7%20GP%20&%20PP%20Tanah%20Lapang%20&%20Rekreasi%20CTK2000.pdf](https://mytownnet.planmalaysia.gov.my/ver2/gp_versi_1/2000_7%20GP%20&%20PP%20Tanah%20Lapang%20&%20Rekreasi%20CTK2000.pdf)
- Mohamad Isham, N. H., Rahman, H. A., & Mohamed Zain, I. N. (2022). Community perception and assessment of public toilets in Kuala Lumpur among users of KTM commuter public toilet. *Malaysian Journal of Medicine and Health Sciences*, 18, 82-90. [https://medic.upm.edu.my/upload/dokumen/2022041110231010\\_1072.pdf](https://medic.upm.edu.my/upload/dokumen/2022041110231010_1072.pdf)

- Mohamad Muslim, H. F., Yahya, N. A., & Mamat, M. P. (2018). Personal and environment factors associated with attraction to tropical urban parks in Peninsular Malaysia. *Journal of Business Management and Accounting*, 8(2), 49-64. <https://doi.org/10.32890/jbma2018.8.2.8805>
- Mohamed, N. (2009). *Public preferences towards naturalistic and designed landscape pattern in park area* [Master's thesis, University Teknologi MARA]. Universiti Teknologi MARA Institutional Repository.
- Mohamed, N., & Othman, N. (2012). Push and pull factor: Determining the visitors satisfactions at urban recreational area. *Procedia - Social and Behavioral Sciences*, 49, 175-182. <https://doi.org/10.1016/j.sbspro.2012.07.016>
- Mohandespor, S., & Caymaz, G. F. Y. (2019). Evaluation of urban park design criterias in the Case of Taraqi Park, Herat, Afghanistan. *Journal of Architectural and Development*, 3(4), 62-75. <https://doi.org/10.48619/uxuc.v1i1.178>
- Mohd, A., Yaman, A. R., Tan, C. K., & Yip, H. W. (2005). Campers' characteristic, recreation activities and related forest camping attributes in Shah Alam Agriculture Park, Selangor. *Journal of Applied Sciences*, 5(9), 1546-1552. <https://doi.org/10.3923/jas.2005.1546.1552>
- Moore, A., Lynch, H., & Boyle, B. (2020). Can universal design support outdoor play, social participation, and inclusion in public playgrounds? A scoping review. *Disability and Rehabilitation*, 28(2), 1-22. <https://doi.org/10.1080/09638288.2020.1858353>
- Muderrisoglu, H., Oguz, D., & Şensoy, N. (2010). An evaluation of green areas from the point of user satisfaction in Ankara, Turkey: Gap analyses method. *African Journal of Agricultural Research*, 5(10), 1036-1042. <https://doi.org/10.5897/AJAR.9000042>
- Müderrisioğlu, H., Aydın, S., Ak, M., & Eroglu, E. (2006). Visitor satisfaction evaluated for Abant Nature Park, Turkey. *Journal of Balkan Ecology*, 9(1), 537-548.
- Mumcu, S., & Yılmaz, S. (2016). Seating furniture in open spaces and their contribution to the social life. In R. Efe, İ. Cürebal, A. Gad, & B. Tóth (Eds.), *Environmental Sustainability and Landscape Management* (pp. 169-187). St. Kliment Ohridski University Press.
- Muratet, A., Pellegrini, P., Dufour, A.-B., Arrif, T., & Chiron, F. (2015). Perception and knowledge of plant diversity among urban park users. *Landscape and Urban Planning*, 137, 95-106. <https://doi.org/10.1016/j.landurbplan.2015.01.003>
- Mursadin, A. (2020). Analysis of community satisfaction on the performance of green open area facilities (Case study: Religius Park And River Edge Park in addition to Cattle Bridges In Kasongan). *American Journal of Engineering Research*, 9(8), 141-148. <https://repo-dosen.ulm.ac.id/handle/123456789/28627>
- Myers, S. C. (2022, June 08 ). *Basic principles of pruning woody plants*. University of Georgia Cooperative Extension. [https://secure.caes.uga.edu/extension/publications/files/pdf/B%20949\\_5.PDF](https://secure.caes.uga.edu/extension/publications/files/pdf/B%20949_5.PDF)

- Nagaraj, S., Lee, K. H., Tey, N. P., Ng, C. W., & Jean, P. (2009). Counting ethnicity in Malaysia: The complexity of measuring diversity. *Malaysian Journal of Economic Studies*, 46(1), 5-32. <https://www.proquest.com/docview/312320179?sourcetype=Scholarly%20Journals>
- Nair, G. (2016). Impact of service quality on business performance in hospitality industries: An empirical study. *Journal of Tourism, Hospitality and Sports*, 17, 10-28. <https://core.ac.uk/download/pdf/234696845.pdf>
- Nam, J., & Dempsey, N. (2020). Acceptability of income generation practices in 21st century urban park management: The case of city district parks. *Journal of Environmental Management*, 264, 109948. <https://doi.org/10.1016/j.jenvman.2019.109948>
- Nam, J., & Kim, H. (2019). Differential levels of governance and its impact on urban park management and users' satisfaction. *Journal of the Korean Institute of Landscape Architecture*, 47(4), 50-60. <https://doi.org/10.9715/KILA.2019.47.4.050>
- Nath, T. K., Zhe Han, S. S., & Lechner, A. M. (2018). Urban green space and well-being in Kuala Lumpur, Malaysia. *Urban Forestry & Urban Greening*, 36, 34-41. <https://doi.org/10.1016/j.ufug.2018.09.013>
- National Digital Department. (2024). *Getting pre-school education*. <https://www.malaysia.gov.my/portal/subcategory/98>
- National Geographic. (2020). *Landscape*. <https://www.nationalgeographic.org/encyclopedia/landscape/#:~:text=A%20natural%20landscape%20is%20made,soil%20and%20few%20deciduous%20trees.>
- National Landscape Department. (2010). *Manual penyelenggaraan aset landskap taman awam (MaPAL)*. Jabatan Landskap Negara.
- National Landscape Department. (2019). *Keluasan taman-taman awam mengikut kategori di Malaysia*. [https://archive.data.gov.my/data/ms\\_MY/dataset/keluasan-taman-taman-awam-mengikut-kategori-di-malaysia](https://archive.data.gov.my/data/ms_MY/dataset/keluasan-taman-taman-awam-mengikut-kategori-di-malaysia)
- National Landscape Department. (2022). *Direktori taman-taman awam di Malaysia*. [https://www.jln.gov.my/resources/index/user\\_1/Text%20Documents/Dokumen%20Penerbitan/Direktori\\_Taman-taman\\_Awam\\_di\\_Malaysia.pdf](https://www.jln.gov.my/resources/index/user_1/Text%20Documents/Dokumen%20Penerbitan/Direktori_Taman-taman_Awam_di_Malaysia.pdf)
- National Park Service. (n.d.). *Defining landscape terminology*. <https://www.nps.gov/tps/standards/four-treatments/landscape-guidelines/terminology.htm>
- National Parks Board. (2011). *Urban landscape maintenance in Singapore: Special report on landscape productivity management*. [https://www.nparks.gov.sg/-/media/cuge/ebook/citygreen/cg2/cg2\\_03.pdf?la=en%26hash=F1CC615E7A04AB4DEC586575760CFA5C14129A70](https://www.nparks.gov.sg/-/media/cuge/ebook/citygreen/cg2/cg2_03.pdf?la=en%26hash=F1CC615E7A04AB4DEC586575760CFA5C14129A70)
- National Parks Board. (2014). *Trees inspection and pruning regime*. <https://www.nparks.gov.sg/news/2013/1/nparks-tree-management-programme>

- National Parks Board. (2021). *Understanding fertilisers*.  
<https://www.nparks.gov.sg/nparksbuzz/apr-issue-2021/gardening/understanding-fertilisers>
- National Parks Board. (2022a). *Flora & fauna web*.  
<https://www.nparks.gov.sg/florafaunaweb/flora/1/9/1919>
- National Parks Board. (2022b). *Barbecueing*. <https://www.nparks.gov.sg/activities/fun-and-recreation/barbecueing>
- National Parks Board. (2024). *Urban tree care*.  
<https://www.nparks.gov.sg/treessg/learn/urban-tree-care>
- National Recreation and Park Association (NRPA). (2010). *Why parks and recreation are essential public services*.  
<https://www.nrpa.org/uploadedFiles/nrpa.org/Advocacy/Resources/Parks-Recreation-Essential-Public-Services-January-2010.pdf>
- National Recreation and Park Association (NRPA). (2015). *Helpful hints for creating great park signage*. <https://www.nrpa.org/parks-recreation-magazine/2015/october/helpful-hints-for-creating-great-park-signage/>
- National Recreation and Park Association (NRPA). (2021). *2021 NRPA park and recreation salary survey*.  
[https://www.nrpa.org/contentassets/ec05c422eacb46da9254416bcb128fcc/2021salarysurvey\\_final\\_abridged.pdf](https://www.nrpa.org/contentassets/ec05c422eacb46da9254416bcb128fcc/2021salarysurvey_final_abridged.pdf)
- Neal, C. (2018). *Fertilizing trees and shrubs*. University of New Hampshire.  
[https://extension.unh.edu/resources/files/Resource000590\\_Rep612.pdf](https://extension.unh.edu/resources/files/Resource000590_Rep612.pdf)
- Needham, M. D. (2016). *Visitor experiences and preferences at Blue Lake Regional Park Metro Parks and Nature, Portland* Retrieved from  
[https://nature.forestry.oregonstate.edu/sites/default/files/BlueLake\\_FinalReport.pdf](https://nature.forestry.oregonstate.edu/sites/default/files/BlueLake_FinalReport.pdf)
- Neuvonen, M., Pouta, E., & Sievänen, T. (2010). Intention to revisit a national park and its vicinity. *International Journal of Sociology*, 40(3), 51-70.  
<https://doi.org/10.2753/IJS0020-7659400303>
- New Straits Times. (2015, February 24). Malaysia to have five more public parks in 2016. *New Straits Times*. <https://www.nst.com.my/news/2015/09/malaysia-have-five-more-public-parks-2016>
- New Zealand Ministry of Social Development. (2003). *Physical environment*. Retrieved from <http://socialreport.msd.govt.nz/2003/downloads/sr-physical-environment.pdf>
- Nor'Aini, T. (2017). *Users' satisfaction with usability of Putrajaya parks in relation to post-occupancy evaluation* [Master's thesis, University Putra Malaysia]. Universiti Putra Malaysia Institutional Repository.

- Nordh, H., Hartig, T., Hagerhall, C. M., & Fry, G. (2009). Components of small urban parks that predict the possibility for restoration. *Urban Forestry & Urban Greening*, 8(4), 225-235. <https://doi.org/10.1016/j.ufug.2009.06.003>
- Norlizawati, M., Othman, N., & Wahab, A. H. (2007). Public preferences towards naturalistics versus designed landscape in park area: Urban park and urban forest park. *Prosiding Seminar Kebangsaan Rupa Bandar Malaysia Mengekal Warisan Membina Identiti*, 345. Universiti Teknologi MARA, Perak. <http://oarr.uitm.edu.my/id/eprint/22075>
- Nur Izzati Mohamad. (2020, June 2). Pulau Pinang buka semula taman rekreasi. *Harian Metro*. <https://www.hmetro.com.my/mutakhir/2020/06/585222/pulau-pinang-buka-semula-taman-rekreasi>
- Nur Izzati Syahirah Mohd, A., Mohd Syafiq Syazwan, M., Mohammad Ashraf Abdul, R., Nurdalila, S., Mohd Fahmi Abdul, R., & Ahmad Rusyadi, J. (2023). An investigation of toilet cleanliness assessment and people monitoring at rest and service area (R&R) X and Y. *Journal of Techno-Social*, 15(2), 64-76. <https://publisher.uthm.edu.my/ojs/index.php/JTS/article/view/16264>
- O'Connor, H., & Gibson, N. (2003). A step-by-step guide to qualitative data analysis. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health*, 1(1), 63-90. [https://epe.lac-bac.gc.ca/100/202/300/pimatisiwin/v8no1\\_2010/online/@page\\_id=532](https://epe.lac-bac.gc.ca/100/202/300/pimatisiwin/v8no1_2010/online/@page_id=532)
- Oklahoma Municipal Assurance Group (OMAG) (2020). *Parks, playgrounds & recreation facilities inspections*. <https://www.omag.org/news/2020/1/21/parks-playgrounds-amp-recreation-facilities-inspections>
- Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the consumer*. Irwin-McGraw-Hill.
- Omar, D., Omar, K. A., Kamaludin, Z., Othman, S., & Mohd Yusoff, Z. (2017). Recreational facilities for youth in Malaysian urban areas. Case studies: Lembah Pantai, Kuala Lumpur and Kota Kinabalu, Sabah. *Journal of the Malaysian Institute of Planner*, 15(2), 67-74. <https://doi.org/10.21837/pm.v15i2.268>
- One Less Bottle. (2019). *A guide to installing drinking fountains*. [https://www.onelessbottle.org/wp-content/uploads/sites/14/2019/07/ZSL00084-OneLess-Fountain-Toolkit\\_WEB.pdf](https://www.onelessbottle.org/wp-content/uploads/sites/14/2019/07/ZSL00084-OneLess-Fountain-Toolkit_WEB.pdf)
- Orange County Pond Service. (2024). *Outdoor water fountain maintenance tips*. <https://www.ocpond.org/outdoor-water-fountain-maintenance-tips/>
- Othman, J., & Jafari, Y. (2019). Economic valuation of an urban lake recreational park: Case of Taman Tasik Cempaka in Bandar Baru Bangi, Malaysia. *Sustainability*, 11(11), 1-15. <https://doi.org/10.3390/su11113023>



- Othman, N. (2004). *A cross cultural comparison on preferences towards selected urban landscape planting compositions* [Unpublished doctoral dissertation]. Universiti Teknologi MARA.
- Othman, N., Mohamed, N., & Hisham Ariffin, M. (2008). Public preferences towards urban park design at metropolitan park Kepong. *Built Environment Journal*, 5(1), 1-17. [https://myjurnal.mohe.gov.my/filebank/published\\_article/21336/chap\\_5\\_20081.pdf](https://myjurnal.mohe.gov.my/filebank/published_article/21336/chap_5_20081.pdf)
- Oxford English Dictionary. (2001). *Paperback oxford english dictionary*. Oxford University Press Inc.
- Oxford University Press. (2002). *Paperback oxford english dictionary*. Oxford University Press.
- Özen Turan, S., Pulatkan, M., Beyazlı, D., & Ozen, S. (2016). User evaluation of the urban park design implementation with participatory approach process. *Procedia - Social and Behavioral Sciences*, 216. <https://doi.org/10.1016/j.sbspro.2015.12.042>
- Özgüner, H., & Kendle, A. D. (2006). Public attitudes towards naturalistic versus designed landscapes in the city of Sheffield (UK). *Landscape and Urban Planning*, 74(2), 139-157. <https://doi.org/10.1016/j.landurbplan.2004.10.003>
- Pacific Institute. (2025). *Make public drinking water fountains great again*. <https://pacinst.org/make-public-drinking-water-fountains-great/>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41-50. <https://doi.org/10.1177/002224298504900403>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.
- Park District of Oak Park. (2014). *Ground maintenance service level guidelines*. [https://dyzz9obi78pm5.cloudfront.net/app/image/id/54e386ef7cb829d5392e07c2/n/07.05.00\\_Grounds-Operations-and-Maintenance-Plan.pdf](https://dyzz9obi78pm5.cloudfront.net/app/image/id/54e386ef7cb829d5392e07c2/n/07.05.00_Grounds-Operations-and-Maintenance-Plan.pdf)
- Park, S., Sherry, B., Wethington, H., & Pan, L. (2012). Use of parks or playgrounds: Reported access to drinking water fountains among US adults, 2009. *Journal of Public Health*, 34(1), 65-72. <https://doi.org/10.1093/pubmed/fdr047>
- Parker, J., & Simpson, G. D. (2018). Visitor satisfaction with a public green infrastructure and urban nature space in Perth, Western Australia. *Land*, 7(4), 159. <https://doi.org/10.3390/land7040159>
- Parks Canada. (2007). *Exterior signage - Standards and guidelines*. [https://publications.gc.ca/collections/collection\\_2011/pc/R62-393-2007-eng.pdf](https://publications.gc.ca/collections/collection_2011/pc/R62-393-2007-eng.pdf)
- Parks Division of Rowlett. (2014). *Park maintenance standards*. <https://www.ci.rowlett.tx.us/ArchiveCenter/ViewFile/Item/3571>

- Parks Victoria. (n.d.). *Picnic spots*. <https://www.parks.vic.gov.au/things-to-do/picnic-spots>
- Parra, D. C., Van Zandt, A., Wang, P., Goodman, M., Abhishek, J., Haire-Joshu, D., & Brownson, R. C. (2019). Evaluating park use and satisfaction: The case of Trojan Park in St. Louis Missouri. *International Journal of Environmental Research and Public Health*, 16(15), 2798-2811. <https://doi.org/10.3390/ijerph16152798>
- Parsons, R. (1995). Conflict between ecological sustainability and environmental aesthetics: Conundrum, canard or curiosity. *Landscape and Urban Planning*, 32(3), 227-244. [https://doi.org/10.1016/0169-2046\(95\)07004-E](https://doi.org/10.1016/0169-2046(95)07004-E)
- Pasini, M., Berto, R., Brondino, M., Hall, R., & Ortner, C. (2014). How to measure the restorative quality of environments: The PRS-11. *Procedia - Social and Behavioral Sciences*, 159, 293-297. <https://doi.org/10.1016/j.sbspro.2014.12.375>
- Pasir Mas District Council. (2019). *Destinasi menarik*. <https://mdpmas.kelantan.gov.my/index.php/bantuan/destinasi-menarik/166-taman-rekreasi-tengku-anis>
- Path for All. (2009). *Signage guidance for outdoor access - A guide to good practice*. <https://www.pathsforall.org.uk/mediaLibrary/other/english/signage-guidance-for-outdoor-access.pdf>
- Pathak, V., Jena, B., & Kalra, S. (2013). Qualitative research. *Perspectives in Clinical Research*, 4(3), 192-192. <https://doi.org/10.4103/2229-3485.115389>
- Pawlikowska-Piechotka, A. (2010). Urban outdoor recreation: children's playgrounds in Warsaw. *Studies in Physical Culture and Tourism*, 17(4), 375-384.
- Payne, L. L., Mowen, A. J., & Orsega-Smith, E. (2002). An examination of park preferences and behaviors among urban residents: The Role of residential location, race, and age. *Leisure Sciences*, 24(2), 181-198. <https://doi.org/10.1080/01490400252900149>
- Perumal, V., & Rahman, K. (2016). Analysis of ergo-aesthetics assessment: A case study of public park benches. Shahrirman Zainal Abidin, R. Legino, H. Noor, V. V. Vermol, A. Rusmadiyah, & M. F. Kamaruzaman (Eds.), *Proceedings of the 2nd International Colloquium of Art and Design Education Research (i-CADER 2015)*, 459-471. Springer.
- Peszynski, K., Perczynski, D., & Piwecka, L. (2019). Mathematical model of a fountain with a water picture in the shape of an hourglass. 213, 02064. <https://doi.org/10.1051/epjconf/201921302064>
- Petaling Jaya City Council. (2024). *Draf rancangan kawasan khas seksyen 19, 51 dan 51a Petaling Jaya*. [https://www.mbpj.gov.my/sites/default/files/draf\\_rkk\\_seksyen\\_19\\_51\\_51a\\_petaling\\_jaya.pdf](https://www.mbpj.gov.my/sites/default/files/draf_rkk_seksyen_19_51_51a_petaling_jaya.pdf)
- Pineda, E. (2014). *Associations between park-use, preferences of park features, and physical activity among city residents varying in socioeconomic status* [Master's thesis, East

Carolina University]. East Carolina University's Institutional Repository.  
<https://thescholarship.ecu.edu/server/api/core/bitstreams/5c67ded2-b24a-4566-bb62-707dc700b7bd/content>

- Plunkett, D., Fulthorp, K., & Paris, C. M. (2019). Examining the relationship between place attachment and behavioral loyalty in an urban park setting. *Journal of Outdoor Recreation and Tourism*, 25, 36-44. <https://doi.org/10.1016/j.jort.2018.11.006>
- Port Dickson Municipal Council. (2016). *Taman komuniti awam*. <https://www.mppd.gov.my/ms/pelawat/destinasi-menarik/taman-komuniti-awam>
- Potter, J., & Wetherell, M. (1994). Analyzing discourse. In A. Bryman & R. G. Burgess (Eds.), *Analyzing qualitative data* (1 ed., pp. 47–66). Routledge. <https://doi.org/10.4324/9780203413081>
- Preston, V. (2009). Questionnaire survey. In R. Kitchin & N. Thrift (Eds.), *International encyclopedia of human geography* (pp. 46-52). Elsevier. <https://doi.org/10.1016/B978-008044910-4.00504-6>
- Priadaniswari, R. (2017). The perception of visitors towards the level of satisfaction on park (Case study: Singha Merjosari Park Malang). *IOP Conference Series: Earth and Environmental Science*, 70, 012060. <https://doi.org/10.1088/1755-1315/70/1/012060>
- Priya, S. S. (2019, August 27). Make maintenance a priority. *The Star*. <https://webcache.googleusercontent.com/search?q=cache:4FXnIrrcss0J:https://www.thestar.com.my/metro/metro-news/2019/08/27/make-maintenance-a-priority+&cd=1&hl=en&ct=clnk&gl=my>
- Productive Parks. (2025). *Outdoor lighting maintenance*. <https://productiveparks.com/outdoor-lighting-maintenance>
- Project for Public Spaces (PPS). (2008). *Creating park signage*. Project for Public Spaces. <https://www.pps.org/article/signage>
- Provo Parks & Recreation. (2020). *Parks and grounds maintenance management plan 2020*. <https://www.provo.org/Home/ShowDocument?id=18250>
- Puth, M.-T., Neuhäuser, M., & Ruxton, G. D. (2015). Effective use of Spearman's and Kendall's correlation coefficients for association between two measured traits. *Animal Behaviour*, 102, 77-84. <https://doi.org/10.1016/j.anbehav.2015.01.010>
- Putrajaya Coporation. (2019). *Taman wetland*. <https://www.ppj.gov.my/second-menu/taman-wetland>
- Putrajaya Corporation. (n.d.). *Manual Of physical planning guidelines For Putrajaya local plan precinct 7, 8, 9, And 10*. <https://www.ppj.gov.my/storage/manual/209/209.pdf>
- Pyky, R., Neuvonen, M., Kangas, K., Ojala, A., Lanki, T., Borodulin, K., & Tyrväinen, L. (2018). Individual and environmental factors associated with green exercise in urban

- and suburban areas. *Health & Place*, 55, 20-28.  
<https://doi.org/10.1016/j.healthplace.2018.11.001>
- Radzi, F. M., Long, S. S. A., & Bakar, A. A. (2013). A study on potential application and people awareness on green infrastructure for boulevard: A case study of Putrajaya boulevard. *Seminar Proceeding UMRAN 2013: Vision and Methods Towards Sustainable Built Environment & Livable Communities Kulliyyah of Architecture and Environmental Design*, 1-20.  
[http://irep.iium.edu.my/35312/1/UMRAN\\_2013\\_SEMINAR\\_PAPER\\_-\\_3B\\_%283%29.pdf](http://irep.iium.edu.my/35312/1/UMRAN_2013_SEMINAR_PAPER_-_3B_%283%29.pdf)
- Rahayu Mustafa. (2019, Januari 05). Santai di Lagun Kuala Ibai. *Sinar Harian*.  
<https://www.sinarharian.com.my/article/5659/edisi/terengganu/santai-di-lagun-kuala-ibai>
- Rahm, J., Sternudd, C., & Johansson, M. (2021). “In the evening, I don’t walk in the park”: The interplay between street lighting and greenery in perceived safety. *Urban design International*, 26(1), 42-52. <https://doi.org/10.1057/s41289-020-00134-6>
- Rangoni, R., & Jager, W. (2017). Social dynamics of littering and adaptive cleaning strategies explored using agent-based modelling. *Journal of Artificial Societies and Social Simulation*, 20(2), 1. <https://doi.org/10.18564/jasss.3269>
- Ranjha, S. (2018). *Maintenance of neighborhood parks: Perspectives from resident welfare associations in East Delhi, India* [Doctoral dissertation, Technische Universität Dresden]. Technische Universität Dresden Qucosa. <https://nbn-resolving.org/urn:nbn:de:bsz:14-qucosa2-355033>
- Ratnasri, N., & Sharmilan, T. (2021). Vending machine technologies: A review article. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 58(2), 160-166.  
<https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/12579>
- Raub District Council. (2020). *Taman awan Bukit Fraser*.  
<https://www.mdraub.gov.my/ms/files/taman-awam-bukit-fraserjpg-0>
- Rauf, S., Syarif, E., & Yahya, M. (2023). Evaluation of the recreational function at the Keren Moody park, Gorontalo City. *Journal of Architectural Research and Design Studies*, 7(3), 23-30. <https://doi.org/10.20885/jars.vol7.iss1.art3>
- Razak, M. A. W. A., Othman, N., & Nazir, N. N. M. (2016). Connecting people with nature: Urban park and human well-being. *Procedia - Social and Behavioral Sciences*, 222, 476-484. <https://doi.org/10.1016/j.sbspro.2016.05.138>
- Rea, L. M., & Parker, R. A. (1997). *Designing and conducting survey Research: A comprehensive guide*. Josey-Bass Publishers
- Regional District of Nanaimo. (2002). *Regional district of Nanaimo policy*.  
<https://www.rdn.bc.ca/cms/wpattachments/wpID657atID4524.pdf>

- Renner Sports Surfaces. (2020). *Maintenance of acrylic color surfaces*. <https://rennersports.com/workspace/uploads/files/maintenance-renner-2020.pdf>
- Restroom Association Singapore. (2022). *A guide to better public toilet design and maintenance*. <http://toilet.org.sg/articles/GuideBetterPublicToilet.pdf>
- Rey Gozalo, G., Barrigón Morillas, J. M., Montes González, D., & Atanasio Moraga, P. (2018). Relationships among satisfaction, noise perception, and use of urban green spaces. *Science of The Total Environment*, 624, 438-450. <https://doi.org/10.1016/j.scitotenv.2017.12.148>
- Richards, J., Jiang, X., Kelly, P., Chau, J., Bauman, A., & Ding, D. (2015). Don't worry, be happy: Cross-sectional associations between physical activity and happiness in 15 European countries. *BMC Public Health*, 15(1), 53. <https://doi.org/10.1186/s12889-015-1391-4>
- Riffenburgh, R. H. (2012). Questionnaires and surveys. In R. H. Riffenburgh (Ed.), *Statistics in medicine* (3 ed., pp. 571-579). Academic Press. <https://doi.org/10.1016/B978-0-12-384864-2.00027-5>
- Riki, J., Rezazade, M. H., & Miri, G. (2016). Urban park use, quality evaluation, and resident satisfaction indicators in the city of Zahedan, Iran. *International Journal of Geography and Geology*, 5(4), 60-72. <https://doi.org/10.18488/journal.10/2016.5.4/10.4.60.72>
- Rizal, S., & Syed Ariffin, S. A. I. (2019). The accessibility of mosque and surau in malls as micro mosque in the city centre. *1st International Graduate Conference of Built Environment and Surveying*, 171-177. Universiti Teknologi Malaysia.
- Roanoke Parks and Recreation. (n.d.). *Comprehensive parks maintenance and operations plan*. <http://faculty.wiu.edu/P-Schlag/supplemental/pdfs/13-01%20Parks%20Maintenance%20and%20Operations%20Plan,%20Roanoke.pdf>
- Robert, E. S., & Roger, W. (1993). *Park & recreation maintenance management* (A. Nils, Ed. 3 ed.). Horizons, Inc.
- Rodriguez, A. (2017). Back to basics: Can unstructured camping promote wellbeing? *Therapeutic Communities: The International Journal of Therapeutic Communities*, 38(1), 1-14. <https://doi.org/10.1108/TC-08-2016-0016>
- Rogers, J. N. (2008). Topdressing sports fields: The three W's. *Proceedings of the 71st Annual Michigan Turfgrass Conference*, 30, 91-93. <https://tic.lib.msu.edu/tgif/fullrecord/71431>
- Rohayu, A., Kanniah, K., & Ho, C. (2018). Identification of suitable trees for urban parks and roadsides in Iskandar Malaysia. *Chemical Engineering Transactions*, 63, 385-390. <https://www.aidic.it/cet/18/63/065.pdf>
- Romão, J., Neuts, B., Nijkamp, P., & Shikida, A. (2014). Determinants of trip choice, satisfaction and loyalty in an eco-tourism destination: A modelling study on the

- Shiretoko Peninsula, Japan. *Ecological Economics*, 107, 195-205.  
<https://doi.org/10.1016/j.ecolecon.2014.07.019>
- Rosli, S., Oliver, L. H. L., Adzmi, N. A. M., & Marzukhi, M. A. (2020). Relationship between quality of urban parks and physical activity: A case study in Changkat Public Park, Batu Gajah, Perak. *Journal of the Malaysian Institute of Planner*, 18(4), 158-172.  
<https://doi.org/10.21837/pm.v18i14.824>
- Rossi, S., Pickering, C. M., & Byrne, J. (2012). Differences among hikers, runners and mountain bikers in a peri-urban park. P. Fredman, M. Stenseke, H. Liljendahl, A. Mossing, & D. Laven (Eds.), *The 6th International Conference on Monitoring and Management of Visitors in Recreational and Protected Areas*, 174-175. Swedish University of Agricultural Sciences.
- Rouhi, M., Monfared, M., & Forsat, M. (2017). Measuring public satisfaction on urban parks (A case study: Sari City). *Journal of History Culture and Art Research*, 5(4), 457-473. <https://doi.org/10.7596/taksad.v5i4.618>
- Royal Horticultural Society. (2025). *Furniture: maintaining garden seats and tables*. <https://www.rhs.org.uk/garden-jobs/furniture-maintaining-garden-seats-and-tables>
- Saaid, A. S. H. (2016). *Exploring aspects of design and safety of children playgrounds in Malaysia* [Master's thesis, University Sains Malaysia]. Universiti Sains Malaysia Institutional Repository.
- Sadeghian, M. M., & Vardanyan, Z. (2015). A brief review on urban park history, classification and function. *International Journal of Scientific & Technology Research*, 4(11), 120-124. <https://www.ijstr.org/final-print/nov2015/A-Brief-Review-On-Urban-Park-History-Classification-And-Function.pdf>
- Saeedi, I., & Dabbagh, E. (2021). Modeling the relationships between hardscape color and user satisfaction in urban parks. *Environment, Development and Sustainability*, 23(4), 6535-6552. <https://doi.org/10.1007/s10668-020-00866-z>
- Safferman, B. N. (2015). *Impact of colour on children's play behaviours* [Master's thesis, Michigan State University]. Michigan State University Libraries Digital Repository. <https://d.lib.msu.edu/etd/3496>
- Sahu, P. K. (2013). *Research methodology: A guide for researchers in agricultural science, social science and other related fields*. Springer.
- Sakip, S. R. M., Akhir, N. M., & Omar, S. S. (2015). Determinant factors of successful public parks in Malaysia. *Procedia - Social and Behavioral Sciences*, 170, 422-432.  
<https://doi.org/10.1016/j.sbspro.2015.01.003>
- Sallis, J. F., McKenzie, T. L., Elder, J. P., Broyles, S. L., & Nader, P. R. (1997). Factors parents use in selecting play spaces for young children. *Archives of Pediatrics and Adolescent Medicine*, 151(4), 414-417.  
<https://doi.org/10.1001/archpedi.1997.02170410088012>

- Samad, N. S. A., Abdul-Rahim, A. S., Mohammad Afandi, S. H., & Mohd Johari, M. Y. (2021). Factors influencing the public park use in Kuala Lumpur, Malaysia. *IOP Conference Series: Earth and Environmental Science*, 756(1), 012085. <https://doi.org/10.1088/1755-1315/756/1/012085>
- Samuel, M., & Okey, L. E. (2015). The relevance and significance of correlation in social science research. *International Journal of Sociology and Anthropology Research*, 1(3), 22-28. <http://www.eajournals.org/wp-content/uploads/The-Relevance-and-Significance-of-Correlation-in-Social-Science-Research.pdf>
- San Jose, A. E. (2014). Maintenance, improvement, and supervision of parks and playgrounds in Davao City: An evaluative study. *International Journal of Development and Sustainability*, 3(1), 221-230. <https://isdsnet.com/ijds-v3n1-14.pdf>
- Santos, G. A. C., Dropa, M., Rocha, S. M., Peternella, F. A. S., & Razzolini, M. T. P. (2020). Staphylococcus Aureus and Methicillin-Resistant Staphylococcus aureus (MRSA) in drinking water fountains in urban parks. *Journal of Water and Health*, 18(5), 654-664. <https://doi.org/10.2166/wh.2020.042>
- Santos, T., Nogueira Mendes, R., & Vasco, A. (2016). Recreational activities in urban parks: Spatial interactions among users. *Journal of Outdoor Recreation and Tourism*, 15, 1-9. <https://doi.org/10.1016/j.jort.2016.06.001>
- Sapari, M. S., Shuib, A., Ramachandran, S., & Afandi, S. H. M. (2013). Visitors' satisfaction towards service and facilities in Kilim Karst Geoforest Park, Langkawi. *Journal of Applied Economics and Business*, 1(4), 25-42. <https://www.aebjournal.org/article010403.php>
- Saraswati, P., & Devi, A. (2023). Mixed methods-research methodology an overview. *Mathews Journal of Nursing and Health Care*, 5(4), 1-3. <https://doi.org/10.30654/MJNH.100024>
- Sasidharan, V., And, F. W., & Godbey, G. (2005). Cultural differences in urban recreation patterns: An examination of park usage and activity participation across six population subgroups. *Managing Leisure*, 10(1), 19-38. <https://doi.org/10.1080/13606710500086710>
- Sauer, C. O. (1925). *The morphology of landscape* (Vol. 2). University of California Press Berkeley.
- Schneider, I. E. (2009). Urban water recreation: Experiences, place meanings, and future issues. In L. A. Baker (Ed.), *The water environment of cities* (pp. 125-140). Springer US. [https://doi.org/10.1007/978-0-387-84891-4\\_7](https://doi.org/10.1007/978-0-387-84891-4_7)
- Schonfeld, D. J., & Dreyer, B. P. (2008). Research foundations, methods, and issues in developmental-behavioral pediatrics. In M. L. Wolraich, D. D. Drotar, P. H. Dworkin, & E. C. Perrin (Eds.), *Developmental-Behavioral pediatrics* (pp. 47-56). Mosby. <https://doi.org/https://doi.org/10.1016/B978-0-323-04025-9.50006-4>

- Schrammeijer, E. A., van Zanten, B. T., Davis, J., & Verburg, P. H. (2022). The advantage of mobile technologies in crowdsourcing landscape preferences: Testing a mobile app to inform planning decisions. *Urban Forestry & Urban Greening*, 73, 127610. <https://doi.org/10.1016/j.ufug.2022.127610>
- Schrammeijer, E. A., van Zanten, B. T., & Verburg, P. H. (2021). Whose park? Crowdsourcing citizen's urban green space preferences to inform needs-based management decisions. *Sustainable Cities and Society*, 74, 103249. <https://doi.org/10.1016/j.scs.2021.103249>
- Schroeder, H. (1991). Preference and meaning of arboretum landscapes: Combining quantitative and qualitative data. *Journal of Environmental Psychology*, 11(3), 231-248. [https://doi.org/10.1016/S0272-4944\(05\)80185-9](https://doi.org/10.1016/S0272-4944(05)80185-9)
- Schroeder, H. W., & Anderson, L. M. (1984). Perception of personal safety in urban recreation sites. *Journal of Leisure Research*, 16(2), 178-194. <https://doi.org/10.1080/00222216.1984.11969584>
- Schroeder, W. H. (1982). Preferred features of urban parks and forests. *Journal of Arboriculture*, 8(12), 317-322. [https://www.nrs.fs.usda.gov/pubs/jrnl/1982/nc\\_1982\\_schroeder\\_001.pdf](https://www.nrs.fs.usda.gov/pubs/jrnl/1982/nc_1982_schroeder_001.pdf)
- Schultz, P. W., Bator, R. J., Large, L. B., Bruni, C. M., & Tabanico, J. J. (2011). Littering in context: Personal and environmental predictors of littering behavior. *Environment and Behavior*, 45(1), 35-59. <https://doi.org/10.1177/0013916511412179>
- Sekaran, U. (2003). *Research methods for business* (4th ed.). John Wiley & Sons, Inc.
- Sepak Takraw Association of Canada (STAC). (2023). *Sepak takraw - A brief overview*. <https://sepaktakraw.ca/sepak-takraw-brief-overview#specific-position>
- Shaffer, G. S., & Anderson, L. M. (1985). Perceptions of the security and attractiveness of urban parking lots. *Journal of Environmental Psychology*, 5(4), 311-323. [https://doi.org/10.1016/S0272-4944\(85\)80001-3](https://doi.org/10.1016/S0272-4944(85)80001-3)
- Shafie, M. F., Lai, W. S., & Mohammed, N. (2023). Consumer satisfaction and demand for commercial football fields in Malaysia: A case study in Hulu Langat Selangor. *Social Sciences & Humanities Open*, 8(1), 100634. <https://doi.org/10.1016/j.ssaho.2023.100634>
- Shafira Ranandya Herawan, Johannes Parlindungan, & Wulan Dwi Purnamasari. (2022). Evaluasi hubungan kemampuan restoratif terhadap revisit intention dari Taman Tematik di Kota Bandung. *Planning for Urban Region and Environment*, 11(2), 111-118. <https://purejournal.ub.ac.id/index.php/pure/article/view/228/190>
- Shamsul Kamar, N. A., Rahim, S. K., Ambrose, A., Awing, N. H., Samdin, Z., Hassan, A., Nazre Saleh, M., & Terhem, R. (2023). Pest and disease incidence of coniferous species in Taman Saujana Hijau, Putrajaya urban park, Malaysia. *Journal of Forestry Research*, 34, 2065–2077. <https://doi.org/10.1007/s11676-023-01644-z>



- Shanahan, D. F., Lin, B. B., Gaston, K. J., Bush, R., & Fuller, R. A. (2015). What is the role of trees and remnant vegetation in attracting people to urban parks? *Landscape Ecology*, 30(1), 153-165. <https://doi.org/10.1007/s10980-014-0113-0>
- Shannon-Baker, P. (2023). Philosophical underpinnings of mixed methods research in education. In R. J. Tierney, F. Rizvi, & K. Ercikan (Eds.), *International Encyclopedia of Education* (4 ed., pp. 380-389). Elsevier. <https://doi.org/10.1016/B978-0-12-818630-5.11037-1>
- Sharip, Z., & Zakaria, S. (2007). Lakes and reservoir in Malaysia: Management and research challenges M. Sengupta & R. Dalwani (Eds.), *Proceedings of Taal 2007: The 12th World Lake Conference*, 1349-1355. [https://www.academia.edu/30500446/Lakes\\_and\\_Reservoir\\_in\\_Malaysia\\_Management\\_and\\_Research\\_Challenges](https://www.academia.edu/30500446/Lakes_and_Reservoir_in_Malaysia_Management_and_Research_Challenges)
- Shayestefar, M., Pazhouhanfar, M., van Oel, C., & Grahn, P. (2022). Exploring the influence of the visual attributes of Kaplan Preference Matrix in the assessment of urban parks: A discrete choice analysis. *Sustainability*, 14(12), 7357. <https://doi.org/10.3390/su14127357>
- Sherratt, P. (2011). *The benefits of turf*. BuckeyeTurf. <https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/1/14282/files/2018/04/BenefitsofTurf-si6qg8.pdf>
- Shi, W., Lai, J. H. K., Chau, C. K., Wong, P., & Edwards, D. (2021). Analytic evaluation of facilities performance from the user perspective: Case study on a badminton hall. *Facilities*, 39(13/14), 888-910. <https://doi.org/10.1108/F-10-2020-0119>
- Shores, K. A., & West, S. T. (2010). Rural and urban park visits and park-based physical activity. *Preventive Medicine*, 50(1), 13-17. <https://doi.org/10.1016/j.ypmed.2009.07.023>
- Shukur, F., Othman, N., & Nawawi, A. H. (2012). The values of parks to the house residents. *Procedia - Social and Behavioral Sciences*, 49, 350-359. <https://doi.org/10.1016/j.sbspro.2012.07.033>
- Sileyew, K. J. (2019). Research design and methodology. In E. M. O. Abu-Taieh, I. H. Al Hadid, & A. El Mouatasim (Eds.), *Cyberspace*. IntechOpen. <https://doi.org/10.5772/intechopen.85731>
- Sinatra, F., Natakusuma, A. A., Ibad, Z., & Fitra, H. A. (2021). Urban park qualities accordance to perception of visitors In Palembang: Case studies Kambang Iwak Park and Dharma Wanita Park. *IOP Conference Series: Earth and Environmental Science*, 830(1), 012093. <https://doi.org/10.1088/1755-1315/830/1/012093>
- Smith, B. L., & Hallo, J. C. (2019). Informing good lighting in parks through visitors' perceptions and experiences. *International Journal of Sustainable Lighting*, 21(2), 47-65. <https://doi.org/10.26607/ijsl.v21i02.93>
- Smith, C. W. (2005). *Tree pruning techniques*. New Mexico State University. [https://pubs.nmsu.edu/\\_h/H156/index.html](https://pubs.nmsu.edu/_h/H156/index.html)

- Sommer, B., & Sommer, R. (1991). *A practical guide to behavioral research: Tools and technique* (3rd ed.). Oxford University Press.
- Sorvig, K. (1991). Water design: Special effects. *Landscape Architecture Magazine*. <https://www.jstor.org/stable/44677403>
- Spinservesports. (2024). *Badminton court surface maintenance guide for longevity*. <https://spinservesports.com.au/uncategorized/badminton-court-surface-maintenance-guide-for-longevity-4/>
- Spooner, D. (2014). Enhancing campus sustainability through sites and socially equitable design. *Planning for Higher Education*, 42(4), 30-45. <https://www.proquest.com/docview/1622636368?sourcetype=Scholarly%20Journals>
- Sreetheran, M. (2010). Establishing performance indicators from the user perspective as tools to evaluate the safety aspects of urban parks in Kuala Lumpur. *Journal of Social Science and Humanities*, 18(2), 199-207. [http://www.pertanika.upm.edu.my/resources/files/Pertanika%20PAPERS/JSSH%20Vol.%2018%20\(2\)%20Sep.%202010/05%20Pg%20199-208.pdf](http://www.pertanika.upm.edu.my/resources/files/Pertanika%20PAPERS/JSSH%20Vol.%2018%20(2)%20Sep.%202010/05%20Pg%20199-208.pdf)
- Sreetheran, M. (2017). Exploring the urban park use, preference and behaviours among the residents of Kuala Lumpur, Malaysia. *Urban Forestry & Urban Greening*, 25, 85-93. <https://doi.org/10.1016/j.ufug.2017.05.003>
- Stadelmaier, J., Meerpohl, J. J., & Toews, I. (2022). Willingness to participate in, support or carry out scientific studies for benefit assessment of available medical interventions: A stakeholder survey. *PLoS One*, 17(8), e0271791. <https://doi.org/10.1371/journal.pone.0271791>
- Stanton-Chapman, T. L., & Schmidt, E. L. (2017). Caregiver perceptions of inclusive playgrounds targeting toddlers and preschoolers with disabilities: Has recent international and national policy improved overall satisfaction? *Journal of Research in Special Educational Needs*, 17(4), 237-246. <https://doi.org/10.1111/1471-3802.12381>
- Stockemer, D. (2019). *Quantitative methods for the social sciences: A practical introduction with examples in SPSS and Stata*. Springer International Publishing.
- Stratton, S. J. (2021). Population research: Convenience sampling strategies. *Prehospital and Disaster Medicine*, 36(4), 373-374. <https://doi.org/10.1017/S1049023X21000649>
- Suhaidi, U. S., Adi Maimun, N. H., & Eni, S. (2025). Shaping sustainable urban spaces: Understanding green space user needs in Malaysia. *Civil and Environmental Engineering Reports*, 35(2), 1-14. <https://doi.org/10.59440/ceer/201176>
- Sulaiman, F. C., Hasan, R., & Jamaluddin, E. R. (2016). The mature trees in recreation areas and its role in enhancing quality of life. *Procedia - Social and Behavioral Sciences*, 234, 289-298. <https://doi.org/10.1016/j.sbspro.2016.10.245>

- Sunshine Gym. (2024). *Outdoor gym equipment*.  
<https://online.flippingbook.com/view/1010226986/>
- Swift Canoe & Kayak. (n.d). *Canoe maintenance*. [https://swiftcanoe.com/wp-content/uploads/2020/02/Canoe\\_Maintenance.pdf](https://swiftcanoe.com/wp-content/uploads/2020/02/Canoe_Maintenance.pdf)
- Taber, K. S. (2018). The Use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296.  
<https://doi.org/10.1007/s11165-016-9602-2>
- Taib, C. Z. S., & Tazilan, A. S. (2017). Urban parks (UP) for all-barrier free (BF) at micro architecture (MA). *Science International (Lahore)*, 22(2), 183-187. <http://www.sci-int.com/pdf/636305761620607741.pdf>
- Talal, M. L., & Santelmann, M. V. (2020). Vegetation management for urban park visitors: A mixed methods approach in Portland, Oregon. *Ecological Applications*, 30(4), e02079. <https://doi.org/10.1002/eap.2079>
- Talal, M. L., & Santelmann, M. V. (2021). Visitor access, use, and desired improvements in urban parks. *Urban Forestry & Urban Greening*, 63, 127216.  
<https://doi.org/10.1016/j.ufug.2021.127216>
- Tan, N. (2015, June 12). *Football field construction guidelines and principles*. Scribd.  
<https://www.scribd.com/document/268486679/Football-Field-Requirements>
- Tempesta, T. (2015). Benefits and costs of urban parks: A review. *Aestimum*, 67, 127-143.  
<https://doi.org/10.13128/Aestimum-17943>
- Tennessee, U. o. (n.d). *Nursery irrigation: A guide for reducing risk and improving production*.  
<https://utia.tennessee.edu/publications/wp-content/uploads/sites/269/2023/10/PB1836.pdf>
- Ter, Ü. (2011). Quality criteria of urban parks: The case of Alaaddin Hill (Konya-Turkey). *African Journal of Agricultural Research*, 6(23), 5367-5376.  
<https://doi.org/10.5897/AJAR11.016>
- Texas Department of Transportation. (n.d). *Picnic and rest area maintenance*.  
<https://ftp.txdot.gov/pub/txdot-info/cmd/cserve/specs/2004/standard/s745.pdf>
- The Cultural Landscape Foundation. *Public park*. <https://tclf.org/category/designed-landscape-types/public-park>
- The Pennsylvania State University. (2018). *Landscape maintenance manual*.  
<https://www.publicgardens.org/resources/arboretum-maintenance-plan>
- The Royal Parks. (2022a). *History and Architecture*.  
<https://www.royalparks.org.uk/parks/hyde-park/about-hyde-park/history-and-architecture#:~:text=Henry%20VIII%20acquired%20Hyde%20Park,throne%20and%20permitted%20limited%20access.&text=Hyde%20Park%20became%20a%20venue%20for%20national%20celebrations>

- The Royal Parks. (2022b). *Kensington gardens history and architecture*. <https://www.royalparks.org.uk/parks/kensington-gardens/about-kensington-gardens/history-and-architecture>
- The Star. (2023, March 10). Dataran Labuan gets stunning facelift. *The Star*. <https://www.thestar.com.my/news/nation/2023/03/10/dataran-labuan-gets-stunning-facelift>
- The Trust for Public Land. (2014). *2014 city park facts*. [https://www.tpl.org/wp-content/uploads/2014/04/2014\\_CityParkFacts.pdf](https://www.tpl.org/wp-content/uploads/2014/04/2014_CityParkFacts.pdf)
- The University of Arizona. (2006). *Watering trees and shrubs*. [https://cals.arizona.edu/extension/ornamentalthort/waterquality/watering\\_trees.pdf](https://cals.arizona.edu/extension/ornamentalthort/waterquality/watering_trees.pdf)
- The University of Chicago. (2022). *Bicycle rentals*. <https://www.mbl.edu/about/campus-facilities-resources/bicycle-rentals>
- Thomas, J. (2021, April 21). From family parks to public hazards. *Free Malaysia Today*. <https://www.freemalaysiatoday.com/category/nation/2021/04/21/from-family-parks-to-public-hazards/>
- Thompson, C. W., & Travlou, P. (2007). *Open space: People space*. Taylor & Francis. <https://doi.org/10.4324/9780203961827>
- Thyer, B. (2009). *The handbook of social work research methods*. SAGE Publications. <https://books.google.com.my/books?id=sdDR020cdlYC>
- Tibesigwa, B., Ntuli, H., & Lokina, R. (2020). Valuing recreational ecosystem services in developing cities: The case of urban parks in Dar es Salaam, Tanzania. *Cities*, 106, 102853. <https://doi.org/10.1016/j.cities.2020.102853>
- Tinsley, H. E. A., Tinsley, D. J., & Croskeys, C. E. (2002). Park usage, social milieu, and psychosocial benefits of park use reported by older urban park users from four ethnic groups. *Leisure Sciences*, 24(2), 199-218. <https://doi.org/10.1080/01490400252900158>
- Tiwari, A. K., P, S. S., Shephalika, A., & Girish, K. S. (2015). *Lawn management*. ICAR-Directorate of Floricultural Research. <https://krishi.icar.gov.in/jspui/bitstream/123456789/34886/1/DFR-Lawn%20management%20-BW.pdf>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>
- Tonge, J., Moore, S., & Taplin, R. (2011). Visitor satisfaction analysis as a tool for park managers: A review and case study. *Annals of Leisure Research*, 14(4), 289-303. <https://doi.org/10.1080/11745398.2011.639339>

- Torrecillas, A., Corell, M., Galindo, A., Pérez-López, D., Memmi, H., Rodríguez, P., Cruz, Z. N., Centeno, A., Intrigliolo, D. S., & Moriana, A. (2018). Agronomical effects of deficit irrigation in apricot, peach, and plum rees. In I. F. García Tejero & V. H. Durán Zuazo (Eds.), *Water scarcity and sustainable agriculture in semiarid environment* (pp. 87-109). Academic Press. <https://doi.org/10.1016/B978-0-12-813164-0.00005-3>
- Town of Rowley. (2020). *SOP 19: Operations and maintenance of parks and open spaces*. [https://www.townofrowley.net/sites/g/files/vyhlf4956/f/uploads/stormwater\\_-\\_sop\\_19\\_operations\\_and\\_maintenance\\_of\\_parks\\_and\\_open\\_spaces\\_and\\_inventory.pdf](https://www.townofrowley.net/sites/g/files/vyhlf4956/f/uploads/stormwater_-_sop_19_operations_and_maintenance_of_parks_and_open_spaces_and_inventory.pdf)
- Ujang, N., Moulay, A., & Zakariya, K. (2015). Sense of Well-Being Indicators: Attachment to public parks in Putrajaya, Malaysia. *Procedia - Social and Behavioral Sciences*, 202, 487-494. <https://doi.org/10.1016/j.sbspro.2015.08.195>
- Ulrich, R. S. (1981). Natural versus urban scenes: Some psychophysiological effects. *Environment and Behavior*, 13(5), 523-556. <https://doi.org/10.1177/0013916581135001>
- Unit Komunikasi Awam Sarawak. (2022). *Taman awam Miri satu lagi destinasi tarik pelancong*. <https://ukas.sarawak.gov.my/2022/07/01/taman-awam-miri-satu-lagi-destinasi-tarikan-pelancong/>
- United Nations Educational Scientific and Cultural Organization (UNESCO). (2022). *Classical gardens of Suzhou*. <https://whc.unesco.org/en/list/813/>
- United States Department of Agriculture (USDA). (2000). *A guide: Developing a street and park tree management plan*. <https://www.umass.edu/urbantree/mgtplanguide.pdf>
- United States Department of Transportation. (n.d). *Walkways, sidewalks, and public spaces*. [https://safety.fhwa.dot.gov/ped\\_bike/univcourse/pdf/swless13.pdf](https://safety.fhwa.dot.gov/ped_bike/univcourse/pdf/swless13.pdf)
- United States Environmental Protection Agency (EPA). (2024). *Indicators: Phosphorus*. <https://www.epa.gov/national-aquatic-resource-surveys/indicators-phosphorus#:~:text=Too%20much%20phosphorus%20can%20stimulate,macroinvertebrates%20and%20other%20aquatic%20life.>
- United States Geological Survey (USGS). (2016). *Removal fallen leaves can improve urban water quality*. <https://www.usgs.gov/news/state-news-release/removal-fallen-leaves-can-improve-urban-water-quality>
- University of California Los Angeles (UCLA). (2014). *Placemaking for an aging population: Guidelines for senior friendly parks*. [https://www.lewis.ucla.edu/wp-content/uploads/sites/2/2015/04/Seniors-and-Parks-8-28-Print\\_reduced.pdf](https://www.lewis.ucla.edu/wp-content/uploads/sites/2/2015/04/Seniors-and-Parks-8-28-Print_reduced.pdf)
- University of Massachusetts Amherst. (2014). *Fertilizing trees and shrubs*. <https://ag.umass.edu/landscape/fact-sheets/fertilizing-trees-shrubs#:~:text=Research%20in%20woody%20plant%20nutrition,for%20feeding%20established%20woody%20plants.>

- University of Massachusetts Amherst. (2016). *Best management practices for lawn and landscape turf*. [https://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/lawn\\_bmp\\_establishment\\_2016\\_final.pdf](https://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/lawn_bmp_establishment_2016_final.pdf)
- University of Salisbury. (n.d.). *Policy brief: Installing city park recycling bins*. [https://www.salisbury.edu/academic-offices/liberal-arts/pace/ceac/\\_files/Installing-City-Park-Recycling-Bins.pdf](https://www.salisbury.edu/academic-offices/liberal-arts/pace/ceac/_files/Installing-City-Park-Recycling-Bins.pdf)
- University of Wyoming. (2006). *Landscaping: Fertilizing trees and shrubs*. [https://www.uwyo.edu/mastergardener/\\_files/docs/b1172.pdf](https://www.uwyo.edu/mastergardener/_files/docs/b1172.pdf)
- Urban Fountains and Furniture. (2018). *Drinking fountains installation, operation and maintenance instructions*. <https://www.urbanff.com.au/wp-content/uploads/2018/08/IOM-A400-web.pdf>
- Utah State University Extension. (2002). *Efficient irrigation of trees and shrubs*. <http://region8water.colostate.edu/PDFs/hg523.pdf>
- Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, 15(3), 398-405. <https://doi.org/10.1111/nhs.12048>
- van den Berg, P., Weijs-Perrée, M., Dane, G., van Vliet, E., Liu, H., Sun, S., & Borgers, A. (2022). A comparative study of urban park preferences in China and the Netherlands. *International Journal of Environmental Research and Public Health*, 19(8), 4632. <https://doi.org/10.3390/ijerph19084632>
- Van Doesum, N. J., & Staats, H. (2022, April 8 ). Trash cans, eyes, and littering. <https://spsp.org/news-center/character-context-blog/trash-cans-eyes-and-littering>
- Van Doesum, N. J., van der Wal, A. J., Boomsma, C., & Staats, H. (2021). Aesthetics and logistics in urban parks; can moving waste receptacles to park exits decrease littering? *Journal of Environmental Psychology*, 77, 101669. <https://doi.org/10.1016/j.jenvp.2021.101669>
- van Rijswijk, L., & Haans, A. (2017). Illuminating for safety: Investigating the role of lighting appraisals on the perception of safety in the urban environment. *Environment and Behavior*, 50(8), 889-912. <https://doi.org/10.1177/00139165177188>
- van Vliet, E., Dane, G., Weijs-Perrée, M., van Leeuwen, E., van Dinter, M., van den Berg, P., Borgers, A., & Chamilothoni, K. (2021). The influence of urban park attributes on user preferences: Evaluation of virtual parks in an online stated-choice experiment. *International Journal of Environmental Research and Public Health*, 18(1), 212. <https://doi.org/10.3390/ijerph18010212>
- Veitch, J., Salmon, J., Kylie, B., Crawford, D., & Timperio, A. (2013). Do features of public open spaces vary between urban and rural areas? *Preventive Medicine*, 56(2), 107-111. <https://doi.org/10.1016/j.ypmed.2012.11.016>

- Veitch, J., Salmon, J., Parker, K., Bangay, S., Deforche, B., & Timperio, A. (2016). Adolescents' ratings of features of parks that encourage park visitation and physical activity. *International Journal of Behavioral Nutrition and Physical Activity*, 13(1), 73. <https://doi.org/10.1186/s12966-016-0391-9>
- Vending Sense. (2023). *The importance of vending machine maintenance*. <https://www.vendingsense.co.uk/blog/vending-machines/the-importance-of-vending-machine-maintenance/>
- Verlič, A., Arnberger, A., Japelj, A., Simončič, P., & Pirnat, J. (2015). Perceptions of recreational trail impacts on an urban forest walk: A controlled field experiment. *Urban Forestry & Urban Greening*, 14(1), 89-98. <https://doi.org/10.1016/j.ufug.2014.12.004>
- Vernon, M., Kirtland, K., Evans, M. H., Wilson, D., Williams, J. E., Mixon, G. M., & Henderson, K. (2004). Evaluating the quality of recreation facilities: Development of an assessment tool. *Journal of Park and Recreation Administration*, 22(1), 96-114.
- Victoria State Government. (2021). *Canoeing and kayaking - Preventing injury*. <https://www.betterhealth.vic.gov.au/health/healthyliving/canoeing-and-kayaking-preventing-injury#using-equipment-for-canoeing-and-kayaking>
- Volkspark Friedrichshain. (2020). *Volkspark Friedrichshain*. <https://www.berlin.de/en/parks-and-gardens/3560363-4407152-volkspark-friedrichshain.en.html>
- Wadood, F., Akbar, F., & Ullah, I. (2021). The importance and essential steps of pilot testing in management studies: A quantitative survey results. *Journal of Contemporary Issues in Business and Government* 27(5), 2419-2431. <https://cibgp.com/au/index.php/1323-6903/article/view/2092>
- Wall, K. A., Zhang, James J, & Pearson, D. W. (1999). Youth preference of city park and recreation department physical activities. *International Sports Journal*, 3(1), 123-133.
- Wan, C., Shen, G. Q., & Choi, S. (2021). Eliciting users' preferences and values in urban parks: Evidence from analyzing social media data from Hong Kong. *Urban Forestry & Urban Greening*, 62, 127172. <https://doi.org/10.1016/j.ufug.2021.127172>
- Wang, K., & Wang, X. (2020). Providing sports venues on mainland China: Implications for promoting leisure-time physical activity and national fitness policies. *International Journal of Environmental Research and Public Health*, 17(14), 5136-5146. <https://doi.org/10.3390/ijerph17145136>
- Wang, P., Han, L., & Ai, F. (2022). What drives visitors' use of bins in urban parks? An application of the Stimulus-Organism-Response Model. *International Journal of Environmental Research and Public Health*, 19(21), 14170. <https://doi.org/10.3390/ijerph192114170>

- Wang, X., Rodiek, S., Wu, C., Chen, Y., & Li, Y. (2016). Stress recovery and restorative effects of viewing different urban park scenes in Shanghai, China. *Urban Forestry & Urban Greening*, 15, 112-122. <https://doi.org/10.1016/j.ufug.2015.12.003>
- Wang, X., Shi, Y., Zhang, B., & Chiang, Y. (2019). The influence of forest resting environments on stress using virtual reality. *International Journal of Environmental Research and Public Health*, 16(18), 3263. <https://doi.org/10.3390/ijerph16183263>
- Wang, Y., Dewancker, B. J., & Qi, Q. (2020). Citizens' preferences and attitudes towards urban waterfront spaces: A case study of Qiantang riverside development. *Environmental Science and Pollution Research*, 27(36), 45787-45801. <https://doi.org/10.1007/s11356-020-10419-6>
- Wang, Z., Yang, S., Liang, W., & Zhu, Y. (2020). How does urban park affect people's health? An empirical study based on Xiaoyaojin Park in Hefei. *IOP Conferences Series: Earth and Environmental Science* 610 012016. <https://doi.org/10.1088/1755-1315/610/1/012016>
- Wang, Z., Zhu, Z., Xu, M., & Qureshi, S. (2021). Fine-grained assessment of greenspace satisfaction at regional scale using content analysis of social media and machine learning. *Science of The Total Environment*, 776, 145908. <https://doi.org/10.1016/j.scitotenv.2021.145908>
- Warren, R., Rea, P., & Payne, S. (2007). *Park and recreation maintenance management*. Sagamore Publishing. 10.1080/1937156X.2007.11949598
- Watts, G. R., Pheasant, R. J., & Horoshenkov, K. V. (2011). Predicting perceived tranquillity in urban parks and open spaces. *Environment and Planning B: Planning and Design*, 38(4), 585-594. <https://doi.org/10.1068/b36131>
- Wazir, Z. A. (2019). City parks for future generation: Millennial references for visiting city parks. *Journal of Advanced Research in Dynamical and Control Systems*, 11(SI-05), 1837-1848. <https://www.jardcs.org/ed-board.php>
- Webb, E., & Forrester, S. (2015). Affective outcomes of intramural sport participation. *Recreational Sports Journal*, 39(1), 69-81. <https://doi.org/10.1123/rsj.2015-0006>
- Welch, D. (1991). *The management of urban parks*. Longman Group UK Limited.
- Westover, T. N. (1989). Perceived crowding in recreational settings: An environment-behavior model. *Environment and Behavior*, 21(3), 258-276. <https://doi.org/10.1177/0013916589213002>
- Wheels for Wellbeing. *Benches and seating in public spaces*. <https://wheelsforwellbeing.org.uk/benches-and-seating-in-public-spaces/>
- Whole Building Design Guide. (2017). *Playground design and equipment*. <https://www.wbdg.org/resources/playground-design-and-equipment>
- Whyte, W. (1980). *The social life of small urban spaces*. Edwards Brothers, Inc.



- Wickremasinghe, L. L. S., & Hettiarachchi, A. A. (2022). An assessment of user preferences on artificial pathway lighting in urban parks with special reference to the Greater Colombo region. *Proceedings of the 26th International Forestry and Environment Symposium*, 26. <https://doi.org/10.31357/fesympo.v26.5727>
- Willemse, L. (2015). Some perceptions and preferences of residents' use of community neighbourhood parks in Mitchells Plain, Cape Town. *Town and Regional Planning*, 66, 15-30. <https://doi.org/10.38140/trp.v66i0.569>
- Williams, D., & Vaske, J. (2003). The measurement of place attachment: Validity and generalizability of a psychometric approach. *Forest Science*, 49(6), 830-840. [https://www.fs.usda.gov/rm/pubs\\_other/rmrs\\_2003\\_williams\\_d001.pdf](https://www.fs.usda.gov/rm/pubs_other/rmrs_2003_williams_d001.pdf)
- Williams, K. J. H., & Cary, J. (2002). Landscape preferences, ecological quality, and biodiversity protection. *Environment and Behavior*, 34(2), 257-274. <https://doi.org/10.1177/0013916502034002006>
- Williamson, K. (2002). Research techniques: Questionnaires and interviews. In K. Williamson, A. Bow, F. Burstein, P. Darke, R. Harvey, G. Johanson, S. McKemmish, M. Oosthuizen, S. Saule, D. Schauder, G. Shanks, & K. Tanner (Eds.), *Research Methods for students, academics and professionals* (2 ed., pp. 235-249). Chandos Publishing. <https://doi.org/10.1016/B978-1-876938-42-0.50023-X>
- Williamson, K., Given, L. M., & Scifleet, P. (2018). Qualitative data analysis. In K. Williamson & G. Johanson (Eds.), *Research methods* (2 ed., pp. 453-476). Chandos Publishing. <https://doi.org/10.1016/B978-0-08-102220-7.00019-4>
- Wilson, N., Signal, L., & Thomson, G. (2018). Surveying all public drinking water fountains in a city: Outdoor field observations and google street view. *Australian and New Zealand Journal of Public Health*, 42(1), 83-85. <https://doi.org/10.1111/1753-6405.12730>
- Wisconsin Department of Natural Resources. (n.d.). *Fishing equipment for loan*. <https://dnr.wisconsin.gov/topic/Fishing/anglereducation/loanerContacts.html>
- Wojnowska-Heciak, M., Suchocka, M., Błaszczuk, M., & Muszyńska, M. (2022). Urban parks as perceived by city residents with mobility difficulties: A qualitative study with in-depth interviews. *International Journal of Environmental Research and Public Health*, 19(4), 2018. <https://doi.org/10.3390/ijerph19042018>
- Wolf, I. D., Wohlfart, T., Brown, G., & Bartolomé Lasa, A. (2015). The use of public participation GIS (PPGIS) for park visitor management: A case study of mountain biking. *Tourism Management*, 51, 112-130. <https://doi.org/10.1016/j.tourman.2015.05.003>
- Wong, A. (2023, September 20). Sad state of affairs at popular park. *The Sun*. <https://thesun.my/malaysia-news/sad-state-of-affairs-at-popular-park-BE11512311>

- World Urban Parks. (2016). *The roles of an urban parks system*. <https://www.worldurbanparks.org/images/Documents/The-Roles-of-an-Urban-Parks-System.pdf>
- Wright Wendel, H., Zarger, R. K., & Mihelcic, J. R. (2012). Accessibility and usability: Green space preferences, perceptions, and barriers in a rapidly urbanizing city in Latin America. *Landscape and Urban Planning*, 107(3), 272-282. <https://doi.org/10.1016/j.landurbplan.2012.06.003>
- Wu, A. (2016). *Understanding Chinese people's experience and satisfaction in urban parks: The case of Stanley Park in Vancouver* [Master's thesis, Vancouver Island University]. Leisure Matters VIU. [https://www.leisuremattersviu.com/uploads/1/0/2/3/102377988/wu\\_ava\\_final\\_thesis\\_2016.pdf](https://www.leisuremattersviu.com/uploads/1/0/2/3/102377988/wu_ava_final_thesis_2016.pdf)
- Wu, K. C., & Wang, H. (2017). Inclusive design thinking for accessible signage in urban parks in Taiwan. M. Antona & C. Stephanidis (Eds.), *Universal Access in Human-Computer Interaction. Human and Technological Environments (UAHCI 2017)*, 10279, 335-347. Springer, Cham.
- Wu, X., Qin, X., & Zhou, H. (2018). Use of community spaces for sports and fitness - A case study of urban inhabitants in Shenzhen City, China. *International Review for Spatial Planning and Sustainable Development*, 6(3), 49-62. [https://doi.org/10.14246/irspsd.6.3\\_49](https://doi.org/10.14246/irspsd.6.3_49)
- Wydra, N. (1997). *Feng Shui in the garden: Simple solutions for creating comforting, life-affirming gardens of the soul*. Contemporary Books. [https://books.google.com.my/books?id=c\\_EKjeInO08C](https://books.google.com.my/books?id=c_EKjeInO08C)
- Xu, J., Chen, L., Liu, T., Wang, T., Li, M., & Wu, Z. (2022). Multi-sensory experience and preferences for children in an urban forest park: A case study of Maofeng Mountain Forest Park in Guangzhou, China. *Forests*, 13(9), 1435. <https://doi.org/10.3390/f13091435>
- Yahaya, A., & Mohd, A. (2013). Products attributes as attraction and as pull factor towards sustaining visitation to putrajaya botanical garden. *Pertanika Journal of Social Science & Humanities*, 21(3), 979-994. [http://www.pertanika.upm.edu.my/resources/files/Pertanika%20PAPERS/JSSH%20Vol.%2021%20\(3\)%20Sep.%202013/09%20Page%20979-994.pdf](http://www.pertanika.upm.edu.my/resources/files/Pertanika%20PAPERS/JSSH%20Vol.%2021%20(3)%20Sep.%202013/09%20Page%20979-994.pdf)
- Yang, F., Ignatieva, M., Larsson, A., Zhang, S., & Ni, N. (2019). Public perceptions and preferences regarding lawns and their alternatives in China: A case study of Xi'an. *Urban Forestry & Urban Greening*, 46, 126478. <https://doi.org/10.1016/j.ufug.2019.126478>
- Yao, K. L. (2015). *Playground utilisation: A study on urban, community and neighbourhood park playgrounds in Manhattan, Kansas* [Master's thesis, Kansas State University]. Connecting Repositories. <https://core.ac.uk/download/pdf/33355247.pdf>

- Yaqi, D., & Rong, Z. (2022). Research on the development of urban parks based on the perception of tourist: A case study of Taihu Park in Beijing. *International Journal of Environmental Research and Public Health*, 19, 5287-5304. <https://doi.org/10.3390/ijerph19095287>
- Yarra Ranges Council. (2025). *Looking after your bin*. <https://www.yarraranges.vic.gov.au/Environment/Waste/Looking-after-your-bin>
- Yilmaz, H., Turgut, H., & Demircan, N. (2011). Determination of the preference of urban people in picnic areas with different landscape characteristics. *Scientific Research and Essays*, 6(8), 1740-1752. <https://academicjournals.org/journal/SRE/article-full-text-pdf/9450D5020568>
- Yılmaz, T., Gökçe, D., Atik, A., & Yılmaz, B. (2013). Determination of handicapped people's preference for the use of urban parks in Antalya. *Journal of Food, Agriculture & Environment* 11(3 & 4), 2295-2301.
- Young, T. (1995). Modern urban parks. *Thematic Issue: American Urban Geography*, 85(4), 535-551. <https://doi.org/10.2307/215924>
- Yu, B., Che, S., Xie, C., & Tian, S. (2018). Understanding Shanghai residents' perception of leisure impact and experience satisfaction of urban community parks: An integrated and IPA method. *Sustainability*, 10(4), 1067-1083. <https://doi.org/10.3390/su10041067>
- Yücel, G. F. (2006). Safety concerns issues for park users, case study in Zeytinburnu waterfront park in Istanbul. *1st International CIB Endorsed METU Postgraduate Conference*, 319-330. <https://www.irbnet.de/daten/iconda/06059011047.pdf>
- Yücel, G. F., & Mimari, P. Y. (2007). Importance of maintenance in the parks according to users satisfaction. *Yildiz Technical University Architecture Faculty E-Journal*, 2(3), 176-187. <https://jag.journalagent.com/megaron/pdfs/MEGARON-92063-ARTICLE-YUCEL.pdf>
- Yuen, M. K. (2018, April 1). Don't play around with safety. *The Star*. <https://www.thestar.com.my/news/nation/2018/04/01/dont-play-around-with-safety-a-staggering-756-of-playgrounds-checked-in-a-study-are-in-bad-condition>
- Yunus, Z. (22 Disember 2019 ). Air pancut setinggi 100 meter, tarikan baharu. *Berita Harian*. <https://www.bharian.com.my/hujung-minggu/santai/2019/12/640739/air-pancut-setinggi-100-meter-tarikan-baharu>
- Yusufzyanova, D. N. (2020). *The role of aesthetic quality in the preference and use of green open spaces: A case study on Grandview and Victoria parks in Vancouver, Canada* [University of British Columbia]. The University of British Columbia Open Collection. <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0390360>
- Zainol, R., & Au-Yong, C. P. (2016). What brings youth to recreational parks? *Journal of the Malaysian Institute of Planner*, 14(5). <https://doi.org/10.21837/pm.v14i5.184>

- Zamlus, N. (2021, March 29). *Pancuran air berirama tarikan terbaru di Shah Alam*. Selangorkini. <https://selangorkini.my/2021/03/pancuran-air-berirama-tarikan-terbaru-di-shah-alam/>
- Zaroff, E., & Holmquist, A. (2021). Access to public parks, drinking fountains, and clean public drinking water in the Bay Area is not driven by income. *Journal of Emerging Investigations*, 4(1), 1-7. <https://doi.org/10.59720/20-175>
- Zeller, R. A. (2005). Measurement error, issues and solutions. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (pp. 665-676). Elsevier. <https://doi.org/10.1016/B0-12-369398-5/00109-2>
- Zengel, R., & Turkseven Dogrusoy, I. (2014). The importance of sociocultural habits in park design, leisure behaviour and user satisfaction. A comparative study on two parks in İzmir, Turkey. *Journal of Settlements and Spatial Planning* 5(2), 107-117.
- Zhai, Y., & Baran, P. K. (2017). Urban park pathway design characteristics and senior walking behavior. *Urban Forestry & Urban Greening*, 21, 60-73. <https://doi.org/10.1016/j.ufug.2016.10.012>
- Zhan, P., Hu, G., Han, R., & Kang, Y. (2021). Factors influencing the visitation and revisitation of urban parks: A case study from Hangzhou, China. *Sustainability*, 13(18). <https://doi.org/10.3390/su131810450>
- Zhang, H., Chen, B., Sun, Z., & Bao, Z. (2013). Landscape perception and recreation needs in urban green space in Fuyang, Hangzhou, China. *Urban Forestry & Urban Greening*, 12(1), 44-52. <https://doi.org/10.1016/j.ufug.2012.11.001>
- Zhang, K., Tang, X., Zhao, Y., Huang, B., Huang, L., Liu, M., Luo, E., Li, Y., Jiang, T., Zhang, L., Wang, Y., & Wan, J. (2022). Differing perceptions of the youth and the elderly regarding cultural ecosystem services in urban parks: An exploration of the tour experience. *Science of The Total Environment*, 821, 153388. <https://doi.org/10.1016/j.scitotenv.2022.153388>
- Zhang, S., Liu, J., & Long, F. (2019). The comparative analysis on country park management between Hong Kong and Beijing. *Journal of Resources and Ecology*, 10(4), 451-459. <https://doi.org/10.5814/j.issn.1674-764x.2019.04.012>
- Zhao, J., Li, R., & Wei, X. (2017). Assessing the aesthetic value of traditional gardens and urban parks in China. *Urban Design and Planning*, 170(2), 83-91. <https://doi.org/10.1680/jurdp.16.00027>
- Zhou, X., & Parves Rana, M. (2012). Social benefits of urban green space : A conceptual framework of valuation and accessibility measurements. *Management of Environmental Quality*, 23(2), 173-189. <https://doi.org/10.1108/14777831211204921>
- Zhou, Y., Fu, J., & Zhao, C. (2019). Study on satisfaction of people's park in Mianzhu City under the background of population aging. *Open Journal of Social Sciences*, 7(7), 136-146. <https://doi.org/10.4236/jss.2019.77013>

- Zhu, J., Lu, H., Zheng, T., Rong, Y., Wang, C., Zhang, W., Yan, Y., & Tang, L. (2020). Vitality of urban parks and its influencing factors from the perspective of recreational service supply, demand, and spatial Links. *International Journal of Environmental Research and Public Health*, 17(5), 1615-1633. <https://doi.org/10.3390/ijerph17051615>
- Zhu, Y., Zhang, Y., & Biljecki, F. (2025). Understanding the user perspective on urban public spaces: A systematic review and opportunities for machine learning. *Cities*, 156, 105535. <https://doi.org/10.1016/j.cities.2024.105535>
- Zupancic, T., Kingsley, M., Jason, T., & Macfarlane, R. (2015). *Green city: why nature matters to health-an evidence review September 2015*. Toronto Public Health.