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UNDERSTANDING THE EXPECTATIONS OF VISITORS IN PLANNING AND MANAGING THE FACILITIES OF PUBLIC PARKS

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ABSTRACT

Public parks play a significant role in the promotion of human well-being, nature protection and as a medium for ecosystem regeneration. Nonetheless, the provision and management of facilities in Malaysia's public parks has been inconsistently and inadequately administered due to budgetary constraints. To optimise a limited budget whilst safeguarding the multidimensional benefits of parks, this paper aims to identify and classify park facilities according to its vitality. The research was conducted in two stages, involving observation and a questionnaire survey. In total, 1,658 respondents who had experience of visiting the public parks in Malaysia took part in the survey. Exploratory factor analysis (EFA) and reliability analysis were deployed using the Statistical Package for the Social Sciences (SPSS) software to classify the park facilities whilst measuring the consistency of the classification. Nineteen identified facilities were classified into two constructs, namely essential facilities and value-added facilities. The research outcome serves as a guide to plan and manage public parks within budget limitations. Moreover, future research from the perspective of motive and satisfaction in relation to visiting a park is recommended to validate the provision and maintenance of essential and value-added facilities.

1. INTRODUCTION

Public parks play a vital role to tackle environmental issues and to diminish some of the challenges related to climate change (Ibrahim et al., 2020). These parks act as a natural buffer that contribute to sustainable development (Hussain et al., 2010). They are effective in reducing the effects of urban heat islands, mitigating flooding and water pollution, as well as maintaining the ecosystem of flora and fauna. Besides that, public parks provide avenues for people to conduct recreational, leisure, and social activities within their communities (Talal & Santelmann, 2021). They offer healthy and active lifestyles by providing opportunities for physical and mental recovery as well as social interactions in an outdoor environment (Ishak et al., 2018). Parks also provide a crucial role as recreational spaces and an indirect source of health resources during the COVID-19 pandemic (Volence et al., 2021). Hussain et al. (2010) claim that plants in the parks purify the environment by reducing air pollution. Besides beautifying the city, parks help reduce mental stress and increase thinking concentration of the visitors. Likewise, a study by Moyle and Weiler (2016) reveal that park visitation increases positive perceptions among park visitors. According to Younis et al. (2008), the parks also improve the urban communities' socio-economic conditions. These studies have shown the benefits and importance of parks. Nevertheless, these benefits are possessed only when parks are fully utilised by the public (Park, 2020). Therefore, it is crucial to identify the factors influencing the utilisation of public parks.

Talal and Santelmann (2021)'s investigation on the access and use of public parks found that the majority of visitors seek improvements in terms of the provision and maintenance of park facilities such as washrooms, rubbish bins, playgrounds, etc. A recent study of Fontán-Vela et al. (2021) confirmed the association between park maintenance and park use. The study suggested for more investment in public parks to increase park maintenance. Hence, the quantity

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and quality of facilities in public parks are of paramount importance to escalate park use (Park, 2020). Parks are dynamic structures that change continuously with ecological, sociological and economic conditions (Güngör & Polat, 2018). Nonetheless, good park upkeep and maintenance are important park characteristics in fostering park visitation (Mertens et al., 2019). The presence of playground slides, absence of rubbish/graffiti, and the presence of swings and walking paths are important park characteristics that are also crucial in inviting park visitors (Veitch et al., 2017). Furthermore, maintenance is necessary to preserve the attractiveness of public parks because maintenance and attractiveness of parks provide a first impression of parks to the public (Narh et al., 2020).

Studies have also revealed that the growth of green space in Berlin, Germany, has been negatively impacted by lower investment in green spaces as a result of financial constraints on municipal budgets (Kabisch, 2015). According to Reeves (2000), the condition of urban public parks in Britain have deteriorated over the past 30 years as a result of annual budget cuts due to the lack of recognition of parks services. In Malaysia, however, provision and maintenance are affected by financial issues faced by the local authorities, impacting the quality of park facilities (Ishak et al., 2021). The issue has been unresolved for more than a decade, leading to the underutilisation and even abandonment of public parks. Wahid (2005) claimed that a public park located in Kuala Lumpur is abandoned. In this particular public park, the public toilet has no water supply, the park's landscape is not maintained, and rubbish is littered the park. Aznari Mohamed (2011) reported that the public park in Kampung EXPO is abandoned because there is no maintenance concern from the relevant authority. The park then becomes a hotspot for drug and vice activities. Sharifudin (2014) stated that a public park in Cheras requires attention from the authority of the Kuala Lumpur City Hall. The amenities and facilities have been damaged due to vandalism and lack of maintenance. Likewise, Hussein et al. (2016) revealed that design and maintenance of parks are the issues faced by the community because of inappropriate park design by the planners, as well as inadequate maintenance and management by the local authorities.

The budgetary issue faced by the local authorities appears unresolvable. Therefore, a balance between budget control and park facilities provision or maintenance is required. This balance can be achieved by investigating visitors' expectations towards public park facilities, whereby the provision and maintenance of park facilities should be more heavily weighted on facilities that are more desired by the visitors. Thus, this paper aims to identify and classify park facilities using exploratory factor analysis (EFA). The classification of park facilities would be used as a guideline for the planning and maintenance of public parks.

2. BACKGROUND

Design, planning and management of public parks that consider user demands and preferences usually stimulate park visitation (Zainol & Au-Yong, 2016). The experience and satisfaction of park visitors depend on the availability of facilities in the green space area. Thus, it is necessary for the relevant authorities to consider appropriate provision and management of facilities in order to enable park users to engage in their respective recreational targets (Ahmad Shafee & Kamaruddin, 2019). Recreational target is a form of goal where users visit a park with the intention to earn benefits in aspects of physical, mental, and social well-being (Ayala-Azcárraga et al., 2019). Hence, the accessibility of facilities should be in favour of people's needs, demands and preferences, failing which, users may become frustrated and in a worst case scenario the green space may go underutilised or abandoned (Abdullah et al., 1999; Ali & Nawawi, 2006).

Ali and Nawawi (2006) pointed out that the evolving significance of public parks is greatly established on the preferences of activities by the visitors as well as the commitment to maintenance by the relevant authorities. The maintenance of park facilities is vital to sustain the satisfaction of users (Liu & Xiao, 2020). The inclusion of preferred activities in the park indirectly reveals which facilities are being utilised when participating in activities. Commonly, the preferred activities are coded in two categories namely, sedentary and vigorous physical activity (Parra et al., 2019; Pineda, 2014).

The socio-ecological framework in Figure 1 considers not only human behaviour but also how individuals interact with their environment, because the environment may have an impact on whether people participate and use the urban green space. The socio-ecological framework integrates the impact of people's environments with the broader societal context. As a result, it makes a distinction between different levels of influence on a person's behaviour, which can be broken down into two categories: (1) individual factors, such as age and education, as well as social and familial connections, and (2) environmental factors, such as the physical and cultural environment (Giles-Corti et al., 2005).

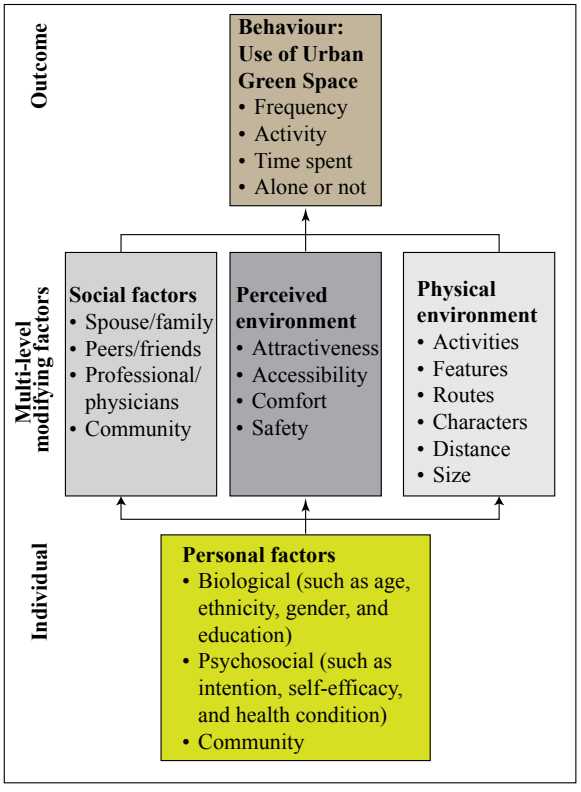

Figure 1: *A socio-ecological framework of the use of urban green space. Inspired by Sallis et al. (1993), Giles-Corti et al. (2005), Hutzler (2007), and Schipperijn (2010).*

According to Schipperijn (2010), the behaviour 'use of green space' can be seen as the result of various interactions between social factors, the perceived environment, the physical environment (i.e., the features of the green space itself) and personal factors. The framework illustrates how multiple levels of modifying factors interact with individual behaviours to influence how people use urban green spaces (Hutzler, 2007; Sallis et al., 1993).

In the Malaysian context, family activities are the most desired activities among many visitors, and they need support of facilities for all ages like playground, picnic facilities, and walkways (Cohen et al., 2016). These are followed by passive observation and social activities that consist of social interaction, which require the presence of a lake or natural scenery. Physical activities follows this, which requires the presence of a soccer field, basketball court, jogging path, etc. (Maulan, 2008, 2015). In addition, users request extra provision of outdoor gym, swimming pool, bicycle track and camping site to facilitate their activities (Maulan, 2008). Goh and Mahmood (2016) also emphasised that adequate public amenities and facilities such as signage, restaurants, souvenir shops and parking are crucial to the satisfaction of users. Hence, the public park is deemed as a hub for recreational and sports activities for the community (Ishak et al., 2021).

In line with how preferred activities indicate the utilisation of park facilities, motives or reasons to visit park are also effective indications of facilities that may be preferred by the public. For instance, Sreetheran (2017) characterised eight (8) motives of park visits, such as to breathe clean air; to release stress and relax; to workout, play sports, and stay fit; to do things with family and friends; to enjoy nature; to find peace and quiet; to meet people; and to take shortcuts. The motives that require facilities have been identified as exercise, playing sports, and staying fit. Thus, sport facilities seem to be closely related and probably highly demanded. For instance, tracks and pathways serve primary sport activities (jogging and walking) in parks (Mohamad Muslim et al., 2018; Mohd Shobri et al., 2021). Well maintained tracks and pathways essentially reduce the risk of any unwanted accidents (Abdelhamid & Elfakharany, 2020).

Othman et al. (2008) revealed that safe and beautiful parks is preferred; conversely, an unsafe and badly maintained park is not preferred. Playgrounds, gazebos, signage, water fountains and flower beds are found to be strongly preferred landscape elements; on the contrary, hazardous uncovered drains and dull looking guard houses are not preferred landscape elements (Norlizawati et al., 2007; Othman et al., 2008). Additionally, the presence of a lake, planting beds, fauna, trees, natural stones, palms, lawn, groundcover, shrubs and trails are features appreciated by users (Danjaji et al., 2018; Rouhi et al., 2017). Regrettably, not all features are upkept to an extent that could satisfy users due to poor maintenance.

Jibril and Elfartas (2018) in a study of park utilisation among Malaysian ethnic groups demonstrated that in the place of preferred activities like social and physical engagements, the quality of attributes in the park is significant to the enjoyment of park visitors. They comprise attributes related to aesthetic, safety, lighting, maintenance and cleanliness. Liu and Xiao (2020) also highlighted that park size, vegetation, recreation, recreation facility, aesthetic, maintenance of facilities and plant equipment, as well as cleanliness of the park are common factors found affecting visitor satisfaction levels. Ishak et al. (2021) further emphasised that the provision and maintenance of park facilities significantly influence the utilisation of public parks. It is necessary to provide park facilities that cater to the needs of community health and ensure that these facilities are well-maintained (Ishak et al., 2018). Therefore, the precise provision and maintenance of park facilities are of utmost importance and further investigation into these aspects is advisable.

3. RESEARCH METHOD

This study adopted mixed method research to identify and classify park facilities based on the expectations of park visitors. In particular, the first stage of the study involved an observation survey around the public parks located in Malaysia to itemise the facilities available and provided in the parks prior to the data gathering. Although some researchers such as Zainudin (2011) asserted that the use of the method would be more appropriate for studies involving human behaviour, observation in this research sought for non-living objects and non-visual aspects of the environment, such as lighting that was essential in influencing the attractiveness and usability of the parks. The observation was subsequently complemented by an online questionnaire survey, which helped in collecting respondents' perceptions and expectations towards the facilities of public parks (Graziano & Raulin, 2010). It also reached a wider geographical area, covering the entire Malaysian population within a shorter timeframe. Some previous research of similar areas also used the questionnaire survey method to investigate preferences and needs for public parks (Abdelhamid & Elfakharany, 2020; Ahmad Shafee & Kamaruddin, 2019). Typically, the questions were structured in five-point Likert's scale, where respondents were asked to rate the importance of park facilities in the aspects of provision and maintenance. The research targeted the Malaysian population as respondents, who are also deemed potential visitors of the public parks. According to the Department of Statistics Malaysia (2021), the population of Malaysia in 2021 was projected at 32.7 million. Based on this, the required minimal sample size was 385 (Krejcie & Morgan, 1970). In order to boost the number of responses, the questionnaire was randomly distributed to any Malaysians that had visited public parks via Google Form. The survey link was shared through social media platforms, including Facebook, LinkedIn, Twitter, etc. As a requirement, potential respondents could only proceed with the survey if they had experience of visiting public parks. The survey ultimately managed to collect 1,658 valid responses, which is acceptable in terms of data generalisability. Nevertheless, the limitation of the study was inevitable. The study intended to generalise the facilities of public parks in Malaysia without specifying to a park. Thus, the findings would be able to provide a general idea about the facilities provided in the public parks, but they might not accurately suit to a localised park based on the local community demand. In the data analysis stage, the Statistical Package for the Social Sciences (SPSS) software was used to run the relevant analyses. Referring to research done by Ruengtam (2017), the EFA was adopted in the data analysis stage to reduce the amount of variables to a smaller set of underlying summary variables, so called "construct". Principal component analysis was selected over other extracting methods as it is recommended when no priori theory or model exists (Gorsuch, 1983). It is also suitable

for establishing preliminary solutions in EFA (Pett et al., 2003). Meanwhile, Williams et al. (2010) highlighted that it is excellent to run factor analysis with a sample size of 1,000 or more. The output of EFA would help to identify and classify the underlying construct of park facilities in Malaysia. In addition to the EFA, Cronbach's alpha coefficient test was conducted to assess the reliability of the survey data (Leech et al., 2011).

4. RESULTS

It was crucial to identify the park facilities available and provided before the questionnaire was designed and distributed. Thus, observation of the facilities available in existing public parks within Malaysia was executed. In total, nineteen (19) park facilities were identified through this observation, as shown in Figure 2, including:

i. Natural landscape (hill, lake, stream, river, pond, etc.) (Figure 2a)
ii. Designed landscape – softscape (flower bed, mown grass, etc.)
iii. Designed landscape – hardscape (water fountain, retaining wall, fencing, etc.)
iv. Children playground (Figure 2c)
v. Water activity facilities
vi. Track/path (jogging/walking) (Figure 2b)
vii. Outdoor gym facilities (Figure 2h)
viii. Recreational facilities (cycling, horse riding, etc.)
ix. Outdoor sport facilities (football, basketball, volleyball, tennis, etc.)
x. Indoor sport facilities (badminton, futsal, table tennis, etc.)
xi. Park furniture (benches, gazebo, etc.) (Figure 2g)
xii. Picnic/camping area
xiii. Washroom (Figure 2f)
xiv. Prayer room (Figure 2d)
xv. Signage (Figure 2i)
xvi. Park lighting
xvii. Rubbish bin (Figure 2e)
xviii. Drinking fountain
xix. Kiosk/vending machine


A


B


C


D


E

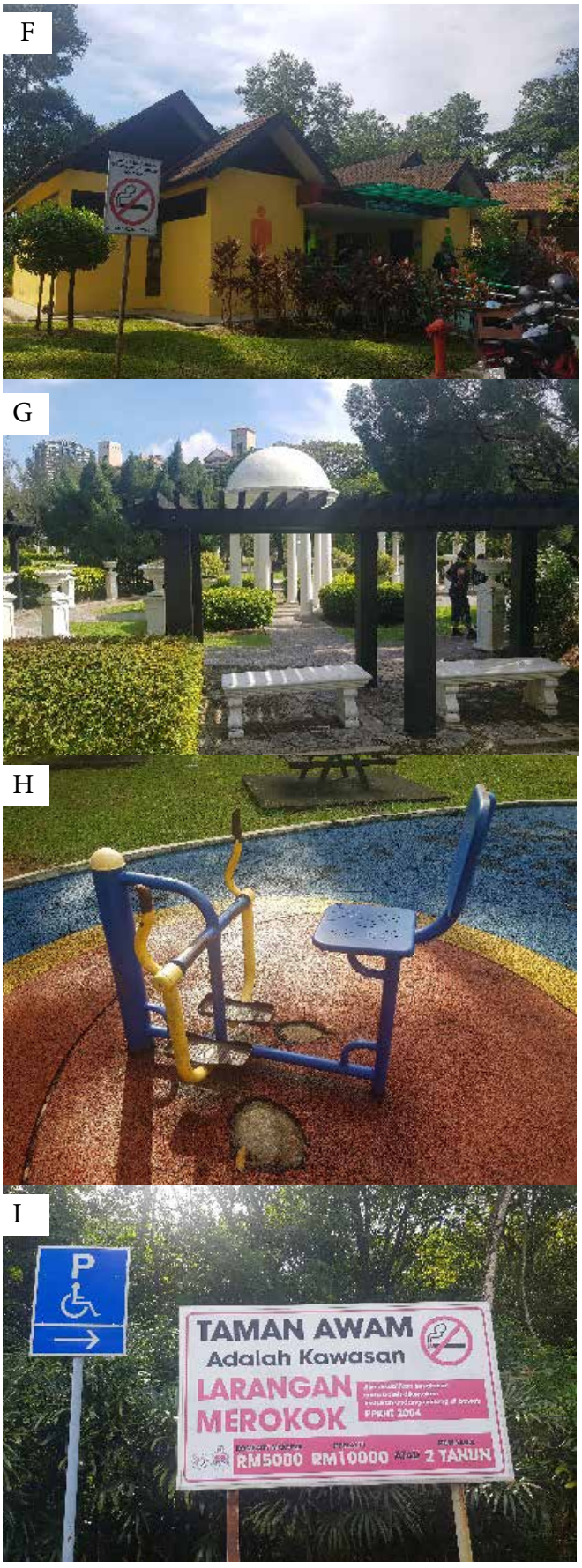

Figure 2: *Facilities in public parks*

The questionnaire then covered all the identified park facilities for further investigation in the survey. Prior to answering the objective of research, the various demographic profiles of the questionnaire survey respondents were recorded and tabulated in Table 1. The research took into consideration respondents from different demographic profiles, with the intention to acquire equal feedback from the community. Overall, the respondents were from different genders, ethnicities, age groups and income groups.

Table 1: *Demographic profiles of the respondents*

Description		Frequency	Percentage
Gender			
·	Male	645	38.9
·	Female	1,013	61.1
Ethnic			
·	Malay	900	54.3
·	Chinese	601	36.2
·	Indian	113	6.8
·	Sabah/Sarawak native	39	2.4
·	Others	5	0.3
Age			
·	Below 21	255	13.6
·	21-30	1,069	64.5
·	31-40	144	8.7
·	41-50	130	7.8
·	51-60	50	3.0
·	Above 60	40	2.4
Monthly income (Malaysian Ringgit, RM)			
·	Below RM2,000	1,095	66.0
·	RM2,000-RM2,999	210	12.7
·	RM3,000-RM3,999	144	8.7
·	RM4,000 and above	209	12.6

As the aim of this paper was to be achieved by interpreting the EFA outputs, essential coefficients of the EFA were presented. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to examine the suitability of the respondent data for the EFA. The KMO index of the research data was 0.955 (>0.50); while the Bartlett's Test of Sphericity significance value was 0.000 ($p<0.05$), both indicating that the data was suitable for the EFA (Williams et al., 2010).

In the extraction of the EFA, the analysis output demonstrated two components where initial eigenvalues of more than 1 were the constructs in this EFA (Ruengtam, 2017). The percentage of explained variance was 58.87%, as shown in Table 2. According to Williams et al. (2010), an explained variance ranging from 50-60% is acceptable in social science and humanity research.

In order to generate a more interpretable and simplified finding, rotation was done to the EFA. This research adopted the Oblique Oblimin rotation because the rotation produced correlated constructs, which is often seen as producing more accurate results for research involving human behaviours or perceptions (Williams et al., 2010). The rotation outputs were tabulated in Table 2. Furthermore, a reliability analysis was conducted towards all variables and constructs respectively using Cronbach's alpha coefficient. The coefficients were 0.927, 0.895, and 0.942 for Construct 1, Construct 2 and all variables respectively. All of them were deemed acceptable with coefficients greater than 0.70 (Leech et al., 2011). In addition, the correlation coefficient between Construct 1 and Construct 2 was 0.611.

Table 2: *Factor loading of the EFA and total variance explained*

Park facilities	Construct		Initial Eigenvalues		
	1	2	Total	% of Variance	Cumulative %
Rubbish bin	.902		9.431	49.636	49.636
Park lighting	.875				
Washroom	.867				
Signage	.839				
Park furniture	.802				
Track/path	.789				
Natural landscape	.748				
Designed landscape – softscape	.633				
Designed landscape – hardscape	.525				
Prayer room	.492				
Indoor sport facilities		.919	1.755	9.234	58.870
Water activity facilities		.853			
Recreational facilities		.815			
Outdoor sport facilities		.792			
Outdoor gym facilities		.619			
Kiosk/ vending machine		.578			
Drinking fountain		.481			
Children playground		.460			
Picnic/ camping area	.335	.429			
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

5. DISCUSSION

According to the results, the EFA classifies the nineteen (19) park facilities into two constructs. None of the items were omitted from the EFA as their factor loadings are more than 0.4, which indicate the importance for these items to be included in the respective constructs (Williams et al., 2010). Construct 1 consists of rubbish bin, park lighting, washroom, signage, park furniture, track/path, natural landscape, designed landscape – softscape, designed landscape – hardscape and prayer room; while Construct 2 includes indoor sport facilities, water activity facilities, recreational facilities, outdoor sport facilities, outdoor gym facilities, kiosk/vending machine, drinking fountain, children playground and picnic/camping area.

Based on the outcome of the observation, the park facilities listed in Construct 1 are available and have been provided in all observed parks in Malaysia. They are basic facilities in public parks that meet the common needs of the public (Hussain et al., 2010; Ishak et al., 2018; Volence et al., 2021). Nonetheless, the park facilities grouped in the Construct 2 are selectively available and provided in some observed parks. Therefore, the park facilities under Construct 1 are considered as essential park facilities, while the park facilities under Construct 2 are deemed value-added park facilities. The classification of park facilities is tabulated in Table 3.

Table 3: *Classification of park facilities*

Classification	Park facilities
Essential park facilities	Rubbish bin
	Park lighting
	Washroom
	Signage
	Park furniture
	Track/path
	Natural landscape
	Designed landscape – softscape
	Designed landscape – hardscape
	Prayer room
Value-added park facilities	Indoor sport facilities
	Water activity facilities
	Recreational facilities
	Outdoor sport facilities
	Outdoor gym facilities
	Kiosk/vending machine
	Drinking fountain
	Children playground
	Picnic/camping area

The classification of park facilities can be used as a guide for the planning and management of public parks. In order to meet the expectations of potential visitors, the development of new public parks must provide essential park facilities. These classifications add to the park characteristics studied by previous scholars (Mertens et al., 2019; Veitch et al., 2017). Moreover, these classifications will allow stakeholders to focus on which facilities are to be prioritised and addressed first. Meanwhile, a community survey can be implemented to determine and consider the inclusion and management of desired value-added park facilities prior to the development of a public park within a specific community. Future research is suggested to study the planning and management of park facilities based on the motives behind visits to parks as shown in the conceptual framework in Figure 3. The suggestion is inspired by Sreetheran (2017), who mentioned that the motives behind park visits are important to discover whether certain park facilities are required.

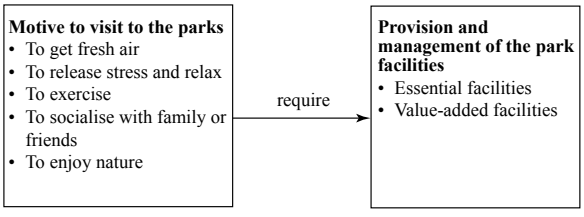

Figure 3*: Conceptual framework 1 for future research*

In the aspect of quality, the conditions of all the park facilities are varied across different parks. This scenario can be due to the distinct level of maintenance implementation from the respective local authorities. In reference to the classification of park facilities, the maintenance of essential park facilities must be emphasised. Moreover, future research is recommended to investigate the relationship between park performance and the maintenance of park facilities, as shown in Figure 4. The research outcome anticipates to develop maintenance priorities towards park facilities, which will assist park management teams to prioritise the maintenance of park facilities, especially when there is financial constraint (Ishak et al., 2021).

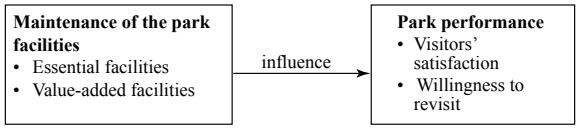

***Figure 4**: Conceptual framework 2 for future research*

5.1 Management Implications

The findings of this paper are essential as a guide to the authorities that plan and manage public parks, particularly in the aspect of the provision and maintenance of park facilities. These results support the findings by Mertens et al. (2019) and Veitch et al. (2017) who emphasised the park's characteristics to foster visitation. To ensure the sustainability of public parks, the provision and maintenance of park facilities should be visitor-oriented. Emphasis on essential park facilities is mandatory, while the provision and subsequent maintenance of value-added park facilities can be based on the preference of local visitors to the respective parks and budget availability. Budget availability should be the sole hindrance towards upgrading or maintaining existing parks. All related stakeholders should further discuss the options available to overcome budget limitations. Co-governance in park maintenance can be an option in addressing budgetary challenges and public involvement should also be considered (Molin & Konijnendijk van den Bosch, 2014). Another option is to allow the zero waste or circular economy concepts to be implemented as these are efficient techniques in park maintenance (Mumford, 2017). Consequently, the utilisation of public parks can be improved.

6. CONCLUSION

A well-developed public park is beneficial to multiple aspects such as environmental and social. However, this becomes meaningless if the park is not optimally utilised. In order to increase the utilisation of public parks, it is necessary to understand the expectations of visitors towards park facilities. Hence, this paper intends to list and classify park facilities based on visitors' demand. The findings determine nineteen (19) facilities available in public parks and group them into two classifications, namely essential park facilities and value-added park facilities. This classification of park facilities can be a helpful guide for local authorities to plan and maintain the facilities. Likewise, a community survey is recommended to determine and consider the inclusion as well as management of desired value-added park facilities prior to the development of a public park within a specific community. Furthermore, future research is recommended in the hope that the research outcomes can formulate a planning and maintenance policy for the public parks to the relevant authorities. The policy is targeted to improve the provision and maintenance of public parks. The utilisation of public parks can then be escalated. Consequently, the benefits of public parks in tackling environmental issues and enhancing the wellbeing of the public can be realised.

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