MEASURING USE PATTERNS AMONG MALAYSIAN NEIGHBOURHOOD PARKS USERS

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ABSTRACT

This study validates the use pattern scales of park users' for Neighbourhood Parks context in Malaysian residential area. Samples of 414 daily park users in two neighbourhood parks in the Klang Valley area were achieved. The measures on use pattern were developed using three use pattern scales which are activities, passive activity and active activity. Confirmatory factor analyses (CFA) were used to validate the instrument. Results showed good-fit indices on each construct confirming the theory behind each and every items used in the study. Despite several reduction on the items, the CFA on use pattern yield a good internal consistencies making it suitable for it's use in the research design as well as future research focusing in measuring the use pattern aspect of neighbourhood green.

Keywords: Use Pattern; Neighbourhood Park; Neighbourhood Green Open Spaces; Confirmatory Factor Analysis.

INTRODUCTION

Generally, open spaces near home are used for leisure activities, work, gatherings, educational projects and many more. There are many terminologies relating to Neighbourhood Parks which have often been used worldwide, among others include, public open spaces, green space, neighbourhood green, residential green, urban green spaces, urban parks and many more. Hence, for the purpose of this study, one common term generally used in Malaysia, the Neighbourhood Park, will be used respectively.

Earlier studies have indicated that there are several important observable factors that influence the use in a neighbourhood space. Among factors includes the qualities and quantity of the space; the social makeup of the potential users which means different socioeconomic class, life-cycle stage, sex, ethnicity and region; psychological factors influencing personal preference as well as the accessibility of local against non-local spaces,

facilities and services (Hester, 1984). The crucial point is that the use of a neighbourhood space depends on many factors other than the design of the space and varies significantly from a neighbourhood to another neighbourhood. This is where the work by Hester comes in great importance as a reference for this study because this study will look into the relationship among factors that could contribute to developing quality neighbourhood space.

Relevant past research relating to use pattern study in the context of Neighbourhood Parks will be divided into four specific sub-topics which includes active recreation, passive recreation, spaces utilized and user focus to be tested in this study. All of these items were gathered from literature mentioning use pattern among people who visited the green open spaces. Active recreation variables used in this research will constitute to a fast moving and a more physical and challenged activities that people usually do in Neighbourhood Parks. Among others are general play activities which include cycling, skating, walking, jogging, swimming, pets walking and basketball and tennis as presented in Table 1.1.

The lack of consistent association in assessing the use pattern aspects within Neighbourhood Parks may be due to difficulties in defining, measuring, and assessing the definition of usage among park users'. Hence, at the research design stage of this study, a confirmatory factor analysis (CFA) method was adopted to validate the instrument used to measure variables associated with the use pattern indicators. Chiesura (2004) study suggested that the current sustainable indicator for urban development which is much related to most city planners and urban designers in their work should take into account the availability of public spaces and green open areas as they have been proven to fulfil the needs and use expectations for the satisfaction of their living environment which should lead to a sustainable city. Therefore, the role of park is clear in providing social services and importance towards city sustainability.

A study in the UK by Williams and Green (2001) reviewed the literature on public spaces and local environments and found that several key factors that undermine public spaces, which includes the undermining of the quality of public spaces or their use. Among the key factors were traffic, business activity, anti-social behaviour and crime, poor design, conflicting roles and privatization of the public realm. In addition, another study, also

in the UK, stated that 'design often lies at the heart of what makes a successful urban green space'. Therefore, design is also a key part of tackling many of the barriers to the use of urban green spaces (Dunnet et al., 2002).

The main purpose of this study is to measure Malaysian park users' use pattern aspects in the Neighbourhood Parks and to develop quality Neighbourhood Parks indicator on use pattern to suit the Malaysian Neighbourhood Parks context. Currently, there is no specific tool and assessment within the Malaysian housing and local authority level to measure the use pattern aspect in Neighbourhood Parks. It is therefore important that this assessment tool or instrument should be well tested using the current and important theories as well as past studies. The valuation of Neighbourhood Parks must start from the appraisal of the needs, wants, use pattern and beliefs towards sustainable city strategies which are in fact the primary intentions of this paper. It should not only satisfy the interests of professionals responsible for planning and management of Neighbourhood Parks, but should also reflect the needs and use pattern of the general public. Indeed, there are several benefits that can be learned from this paper, which will be further explained in the topic below.

USE PATTERN IN NEIGHBOURHOOD PARK

Generally, public open spaces near home are used for leisure activities, work, gatherings, educational projects and much more (Hester, 1984). Earliest studies too have indicated that there are several important observable factors that influence the use in a neighbourhood space. Among factors includes the qualities and quantity of the space; the social makeup of the potential users which means different socioeconomic class, life-cycle stage, sex, ethnicity and region; phychological factors influencing personal preference as well as the accessibility of local against non-local spaces, facilities and services. Relevant past research relating to use pattern study in the context of Neighbourhood Parks will be divided into four specific sub-topics as presented below, which includes active recreation, passive recreation, spaces utilized and user focus.

2.1 Active Recreation

In active recreation, the current preferred use for outdoor activities was relaxing, swimming, basketball, tennis and bicycling. Relaxing includes walking, people-watching, sitting and chatting. Among variations in activity preferences were by age group where young people (13-18 years) were likely to prefer active and water-related activities while Adults (19-60 years) and Senior (over 60 years) had higher preferences towards a more passive activities which also indicated as 'relaxing' use and perceptions of urban greenways (Zhang and Gobster, 1998; Lindsey, 1999).

The mentioned study has established four broad themes for management of the greenways which includes recreation; conservation; linkage and education. Walking, running/jogging, bicycling and skating was the most common activity where users were found to use the trail at least more than three times per week. The study also found that health and fitness was the reason for using greenway trails partly because of the quality of maintenance and trail features indicating the needs for more drinking fountains. Main problem perceived was cleanliness and conflict of use.

Finally, a long-term recreation use pattern study on activity types in urban forest using video monitoring on a daily basis was also referred. The study by Arnberger (2006) indicated that recreation use is more concentrated between late morning and late afternoon especially during weekends with the presence of bicyclists, joggers, walkers and dog walkers. With this data, forest management can tailor direct or indirect measures to address specific user groups to reduce user conflicts or crowding perceptions. All of the above variables were also tested in this study.

2.2 Passive Recreation

Among items that was interested to be tested in this paper under passive recreation, is service quality in park planning and management is more important than service variety. High service quality level is regarded as a well-maintained and a structured natural landscape (Oguz, 2000). Among findings and initial reason for park usage is the recreation options in the natural

landscape environments. Hence, this paper implies that the use of each Neighbourhood Parks has its own characteristics where the main factor for recreation was its natural landscape of each specific park.

Similarly, attractive features of parks were listed as having pleasant landscape and visual elements, nearness to water and peaceful atmosphere, whereas un-preferable features was rated on poor service quality of the facilities in the park such as restaurant, cafes and toilets. Insufficient facilities were rated towards disable facilities as well as activities and programming offered by the park management.

Likewise, the objective measures of distance to the resource do not significantly impact park use or perceived park use benefits by an ethnic group. A study by Gomez and Malega (2007) indicated that the objective measures of distance to the resource or in this context, a Neighbourhood Park, do not significantly impact park use or perceived park use benefits by an ethnic group. They found that distance is not a factor in visiting a park and did not play as critical role especially in suburban areas (in their case is the Westville Dam Recreation Area). Their research supports the continued use of the ethnicity, marginality, discrimination, and acculturation paradigms in combination. Their research also indicates that the relationship between perceived benefit and park use may be bi-directional.

Notwithstanding, a study in Switzerland contends that favoured surroundings and location for picnic sites were by a stream where children could play, drinks could be cooled, is slightly away from the forest road and fire rings facilities that is without concrete. Most picnickers preferred open forest structure or managed forest where the dense area could be appreciated for their scenic beauty whereas moderately open settings are preferred for recreation purposes. Important elements indicated for a picnic site were seating such as benches or logs and rubbish bins where all infrastructure should be as natural as possible (Hegetschweiler, Rusterholz, and Baur, 2007).

Correspondingly, parks that have more features were more likely to be used for physical activity indicating that park facilities such as paved trails and wooded area had the strongest relationship with park use. Size and distance to the park itself were not significant. Among most common facility used in the park were

path, playground, wooded area, unpaved trail, meadow, paved trail, water area (Kaczynski, Potwarka, and Saelens, 2008).

2.3 Spaces Utilized

Spaces utilized also explains about the venue involving use pattern, where a study showed that location of greenway trails are the important factor in perception of use among visitor. Even a five mile local trail would be too far especially for older adult users (more than 55 years old). Small loop trails that pass through parks and neighbourhood in the other hand, will be more useful and cost effective on a daily basis needs. Design a consideration of the trails too is important to ensure the quality of trails is available to meet user needs and preferences among the findings were the trail surfacing that should reflect use (Gobster, 1995). I do not understand this paragraph and therefore cannot suggest corrections. The English is a bit wayward.

On the other hand, a study among homeowner in Perth, Australia suggested that smaller lot size area such as local wetlands has more apparent effect on reported usage compared to neighbourhood parks or local parks. People who have higher perceptions towards ownership, activities, accessibility, participation, security and comfort tend to be more likely to visit wetlands rather than neighbourhood parks. It is therefore attested that the creation of naturally vegetated water bodies can add benefit and increase demand to those living in smaller blocks household environment. The findings suggested an increase in demand towards artificial wetlands as well as the naturally vegetated water bodies for water management purposes (Syme, Fenton, and Coakes, 2001).

Nevertheless, another study in Guangzhou, China, indicated that the residents prefer large green sites with wide range of recreational facilities, high-quality sites with better design and management and green coverage and mature trees. Most residents have less preference towards solitude and privacy surrounding, water bodies, birds and wildlife. An important purpose for visiting green spaces is for nature appreciation. Accessibility too has high influence on green space selection which request for improvements due to expansion of the mass transit railway network (Jim and Chen, 2006).

2.4 User Focus

User focus aspects identified several strategies for improving the park condition through analysis of strength and weaknesses. Among others are strategies to increase usage through creating more appropriate facilities like children playground, enhancing safety within space which are close proximity to surrounding water and bushes, providing diversification to site such as the inclusion of gas or electric barbeque facilities near picnic tables, provision of toilets and picnic tables closer to parking zones, providing direct disable access, outdoor class based activities for school groups or for other special occasion activities such as small group weddings in the park, reduction in display plant material (to lower operational costs), signage enhancement, designating walks or jogging trails which could also supply educational information about specific plants etc and finally, implementing guided walks policy 'Friends of the Parks' groups (Wrigley and Gould, 2002). Hence, the dependent and independent variables as well as the attributes were further expended as shown in Table 1.1 below.

Table 1.1
The dependent variables, independent variables and attributes used in this study based on Use construct derived from the literature review findings

Dependent Variables	Independent Variables	Attributes	
Use Pattern	Active Recreation	• Cycling • Skating • Walking • Jogging	• Swimming • Pets walking • Basketball & Tennis
	Passive Recreation	• Relaxing/Fishing/Playing Board Games • Celebrations (Birthdays/parties) • Picnic & Barbecuing	• Meet Friends • Spend time in open air • Rest by water & green
	Spaces	• Wooded area	• Trail

	Utilized	• Smaller lot size area • High green coverage • Accessibility • Quality of ambience	location • Design & management • Paved trails

In conclusion, all reviewed items on use patterns in neighbourhood green open spaces from the literature in this paper were analyzed to assess the overall use pattern aspect. These new measures of use patterns under CFA analysis includes three constructs representing use pattern in a neighbourhood park are; activities (10 items); passive activity (3 items); and active activity (2 items) as presented in Figure 1.4.

OBJECTIVES

The main purpose of this study is to measure Malaysian park users' use pattern aspects in the Neighbourhood Parks and to develop quality Neighbourhood Parks indicator on use pattern to suit the Malaysian Neighbourhood Parks context. Among other purpose of this study is to help fill in the gaps as elaborated by Bell et al. (2008) in a study which stated that more methods were required for evaluating projects, so as to obtain a high quality of evidence for better methods of action research. Hence, this research explores the relationship between use patterns towards achieving a quality neighbourhood park. It is also important that this study validate the factorial structures of the use pattern using confirmatory factor analysis (CFA). In particular, this research is designed to address the following objectives: (a) to identify the use pattern of park users in a neighbourhood green open spaces; (b) to measure variables on use pattern; (c) to suggest use patterns measures from the resulting data which can be manipulated into improving the planning and design stage as well as the management strategies for neighbourhood park development.

METHOD

4.1 Participants

The total participants for the study were 414 daily park users in two local neighbourhood parks in Malaysia. Two study areas were used, the first one is *Taman Lembah Kiara*, in Taman Tun Dr. Ismail, Kuala Lumpur and the second one is *Taman Rimba Riang*, in Kota Damansara, Petaling Jaya. Both parks were located in two different local authority jurisdictions but accessible in so many ways within a short distance of 10km between each other. The two sites were selected because the similarity of both community characteristics which are mainly occupied by middle low to upper or high income group, neighbourhood housing areas that were heavily connected to a commercial area and that the neighbourhood developments which offers green open spaces and green corridors in all their developments which in this case a well-connected neighbourhood parks.

4.2 Development of the Instrument and Procedures

The research instrument was developed based on the literature analysis as well as the items tested on use pattern attributes, then it was further developed by integrating various useable items from use pattern study (Lee et al., 2008; Lovejoy et al., 2010; Hur et al., 2010). Every measurement were structured using 5-level Likert scale which are 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree and 5: Strongly Agree.

4.3 Confirmatory Factor Analysis (CFA)

An explicit goal of CFA according to Byrne (2001) is where there is some knowledge of the theory or empirical research where the relationship between the observed measures and the underlying factors is known and that it is tested statistically. Hence, the basic technique of CFA estimates only unanalysed associations among factors and not the direct causal effects (Kline, 2005). Critical ratio (CR) is used to test the significance of each path coefficient. According to Bryne (2001), CR or estimated path coefficient is significant when it is more than 1.96 at .05 levels.

CFA also provided the basis for testing the proposed use pattern model and providing the best data fit. Numerous goodness-of-fit criteria have been established to assess an acceptable model fit.

Several fit indices, such as CMIN or Chi-square value ($\chi 2$), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), as well as Root Mean Square Error of Approximation (RMSEA), will be examined to assess the fit of the measurement model to the data.

RESULTS

5.1 Frequency of visitations

The basic demographic questions in this study also asked about the frequency of visitations to both parks. As illustrated in Figure 1.1, about 30.3% (n=116) of the park users visited both of the parks on every weekends. Most of the users or about 30% (n=115) also happened to be visiting the park every 1 to 3 times in a month. Only 1.8% visited *Taman Lembah Kiara* every day, while 4.7% visited *Taman Rimba Riang* on a daily basis. It was also surprising that about 8.4% (n=32) had never visited both of the park before, and that, it was their first time to the parks.

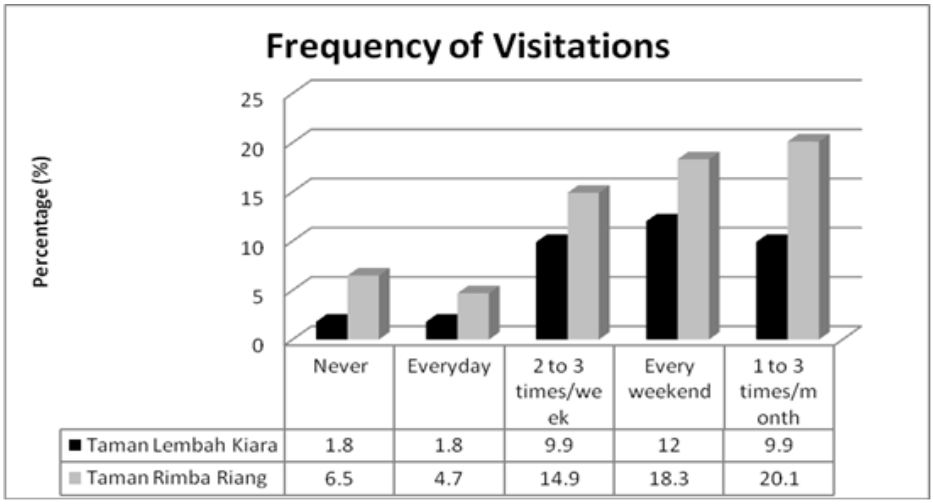

Figure 1.1: *Frequency of Visitations by Study Sites*

5.2 Length of stay

Referring to Figure 1.2, nearly half or 43.2% (n=168) of the park users were identified to be using the park within one hour time. About 29.6% (n=115) were identified to be from *Taman Rimba*

Riang while about 13.6% (n=53) were those from *Taman Lembah Kiara.* In the other hand, the second largest groups were identified as those who visited the park between 2 – 4 hours at every visit. This was about 17.2% (n=67) in *Taman Lembah Kiara* and 21.9% (n=85) in *Taman Rimba Riang.* Similarly, only 15.4% (n=60) visited the park lesser than one hour and only 0.8% visited the park full day. This could be indicated that outdoor green open spaces still seem to be important recreational venues among neighbourhood park users in this study.

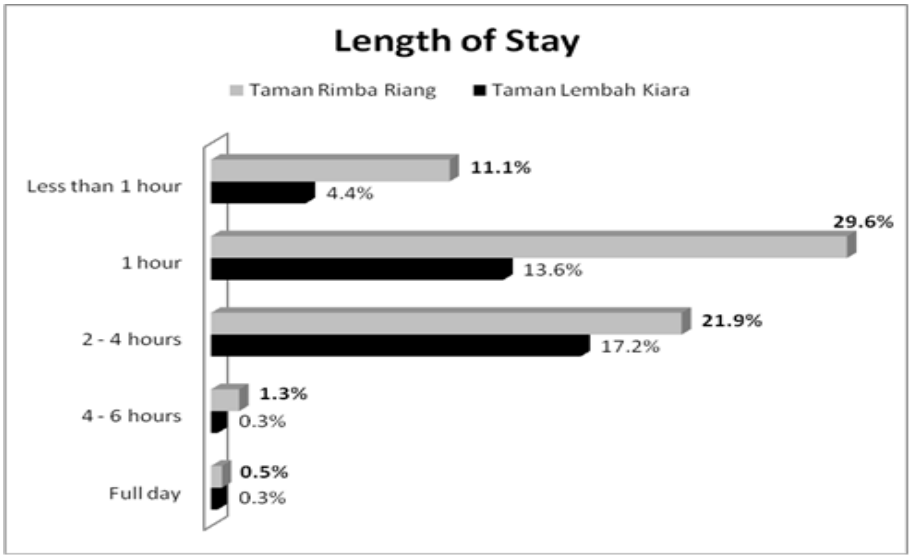

Figure 1.2: *Length of Stay of Respondents by Study Sites*

5.3 Distance to Neighbourhood Park

The length of stay on both of the parks do not seem to be related to the distance of the neighbourhood park from the park user's home. This is because, most of the respondents were identified to be staying more than 5km from the park (n=97; 24.9%) and yet, they still visit the park at least on the weekend. Most of the neighbourhood park visitors mentioned that the distance between their home and the park is about 1km – 2km (n=23; 5.9%) for *Taman Lembah Kiara* and (n=74; 18.9%) *Taman Rimba Riang.* Only about n=49 (12.6%) stayed at a distance of 4km – 5km from

the neighbourhood park (Figure 1.3). This shows that distance do not play an important role for park visitations among park users.

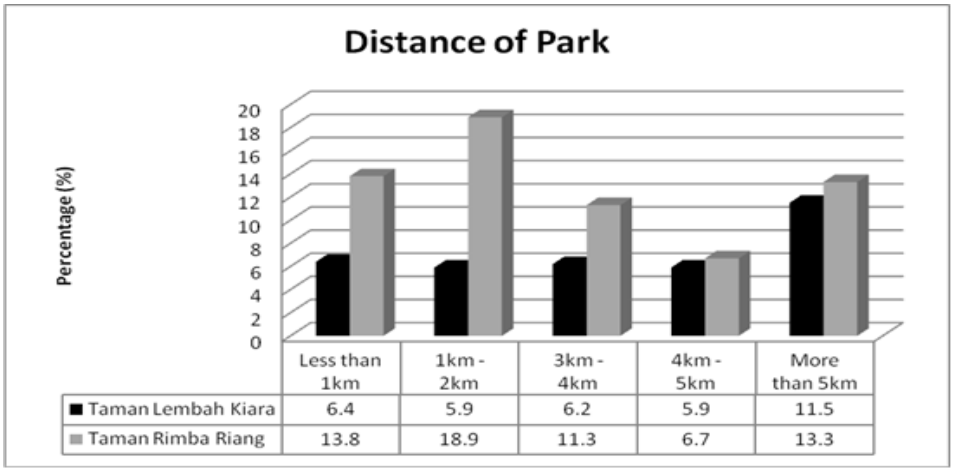

Figure 1.3: *Distance of Park*

5.4 Use pattern in Neighbourhood Park

Table 1.2 indicate the responses on park users' use pattern in Neighbourhood Park. About 65% agreed that a neighbourhood park should have F&B kiosk while 54% disagree that they will only visit the park when there is special event going on. On the reverse statements given in the questionnaire, about 72% enjoyed the sound of water in the park, 67.2% prefer many trees in the park; 59.4% do not like to fish in neighbourhood park; 63.3% prefer larger parks; 43.3% only come to the park to meet friends.

Most responses also disagreed on several matters, such as, 57.7% disagree about enjoying skating in the park indicating that those are the kind of passive or active activities that people in Malaysia do not normally do while about 58% disagreed when asked if they have often celebrated birthday parties or even BBQ with friends and family in park.

On the other hand, only 10.6% walk their pets to the park; 20.5% walk in the park every day; only 23.4% jog in the park everyday which indicated that Malaysian park users do not normally recreate actively in the outdoors. The responses whether they usually relax alone by the pond or sit on the grass does not give

any strong indication about their usage in the park as the results turn out to be about the same throughout the range.

Use Pattern Items	Agreement Level[1]		
	Disagree	**Neutral**	**Agree**
I will only visit the park if there is some special event going on	54.1	25.1	20.8
I do not like the sound of water	72.2	14.5	13.2
I do not like this park as it have too many trees	67.2	19.1	13.7
I walk my pets to this park everyday	71.0	18.4	10.6
I enjoy skating with my friends here	57.7	24.6	17.6
I often celebrate birthday parties or have BBQ with friends and family in the park	57.9	23.7	18.4
I usually relax alone resting by the pond or sit on the grass	38.4	25.8	35.8
I only come here to accompany my children to the playground	43.2	25.1	31.6
I like to fish here	59.4	22.0	18.6
I prefer smaller parks	63.3	21.0	15.7
I only come to this park to meet with my friends	43.3	22.7	34.1
Watching people is the only thing I do here	45.2	23.7	31.2
I often spend time in the wooded/forest area of this park only	35.3	30.9	33.8
I think some kind of F&B kiosk is an absolute requirement for this park	14.8	20.8	64.5
I walk in this park everyday	48.8	30.7	20.5
I jog here everyday	48.1	28.5	23.4

Note: All entries are percentage; n = 414.
[1] Agreement level are based on Disagree = Strongly Disagree + Disagree; Neutral = Neutral; Agree = Strongly Agree + Agree.

It was based on the original scale of 1=Strongly Disagree, 2=Disagree; 3=Neutral; 4= Agree; and 5= Strongly Agree.

Table 1.2:
Distributions of Park Users' Use Pattern in Neighbourhood Parks

5.5 CFA on Use Model

A confirmatory factor model was also tested on the three use pattern sub-scales, namely: a) Activities; (b) Passive Activity and (c) Active Activity. All factors are inter-correlated, indicated by two-headed arrows. There are a total of 16 observed use pattern variables, indicated by 16 rectangles. They represent various use pattern items selected in the green open spaces literature. The observed variables load on the factors in the following pattern: USE_1 until USE_10 load on Factor 1; USE_11 until USE_13 load on Factor 2; and finally USE_14 until USE_16 load on Factor 3. All USE factors were correlated and errors of measurement associated with each observed variables (err01 – err16) are uncorrelated.

The model was also considered to be a fit model with standardized estimates of RMSEA value (0.064), CFI (0.942), GFI (0.935) with p=.000. Table 1.3 indicated that all factor loadings of USE indicators were significant at 0.005 levels. Based from the confirmatory model in Figure 1.4, only USE_14 under use pattern construct was deleted because the factor loading was below 0.40. Among other important additional measurement were NFI (0.912), IFI (0.942), AGFI (0.902) and TLI (0.923).

There were seven correlated error terms, namely err01 to err02 with .20 loadings; err01to err03 with .23 loadings; err02 to err03 with .50 loadings; err04 to err06 with .14; err05 to err07 with .12 loadings; err06 to err07 with .28 loadings and finally err12 to err13 with .20 loadings. Altogether, there was only one item that was removed from the USE sub-scales model. Therefore only 15 items remain in USE confirmatory factor analysis model (Figure 1.4).

Table 1.3:
Estimates of Regression Weights or Significant estimates for use's CFA model

Items - Constructs[1]			Estimate[2]	S.E.[3]	C.R.□	*p*□
USE_1	<---	F1	1.000			
USE_2	<---	F1	.862	.105	8.252	***
USE_3	<---	F1	.877	.103	8.484	***
USE_4	<---	F1	1.303	.133	9.779	***
USE_5	<---	F1	1.409	.143	9.835	***
USE_6	<---	F1	1.416	.144	9.847	***
USE_7	<---	F1	1.142	.135	8.459	***
USE_8	<---	F1	1.131	.140	8.050	***
USE_9	<---	F1	1.308	.143	9.179	***
USE_10	<---	F1	1.118	.128	8.746	***
USE_11	<---	F2	1.000			
USE_12	<---	F2	.884	.099	8.895	***
USE_13	<---	F2	.700	.083	8.405	***
USE_15	<---	F3	1.000			
USE_16	<---	F3	1.072	.071	15.069	***

Note:
[1] Constructs are represented by: : F1=Activities; F2=Passive Activity; and F3=Active Activity;
USE 1 – 16 are the use pattern items;
[2] Estimates of the regression weights;
[3] Approximate standard error;
[4] Critical ratio. The critical ratio is the parameter estimate divided by an estimate of its standard error.
[5] These are based from the standardized estimates values;
*** $p < .005$

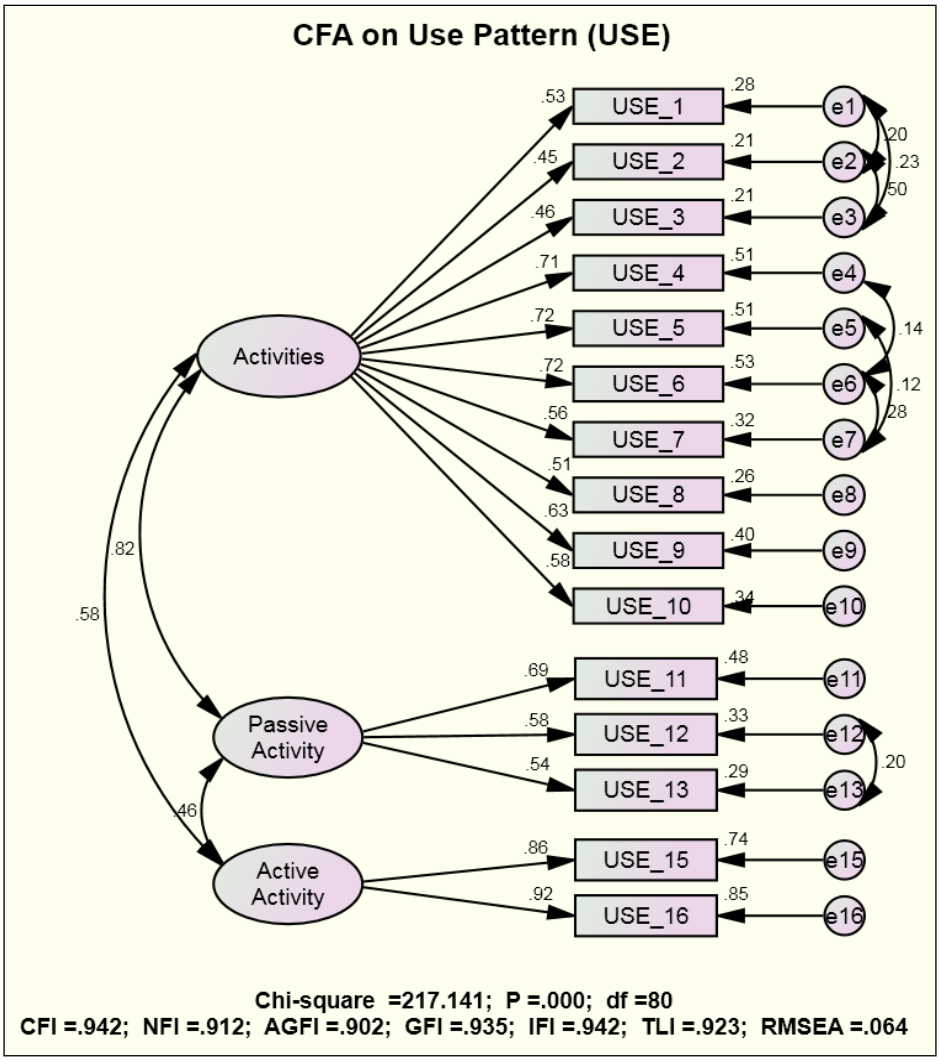

Figure 1.4: *CFA model on use (U)*

DISCUSSION

The results from this study supported the objectives of the study and therefore indicated that there were significant correlations between use patterns to quality green open spaces aspect. Hence indicating that park users' use pattern is obviously an important aspect to consider in relation to assessment and development of quality neighbourhood parks.

Park users' use patterns aspect in Neighbourhood Parks were investigated in this study. In general, people often come to

neighbourhood parks, not only to play games like tennis, badminton or skating, they also come to the park to accompany their children to the playground or to only meet friends nor walk or jog in the park every day.

The findings from this study were similar to Zhang and Gobster (1998) as well as Lindsey's (1999) study where among the usual use pattern in the Indianapolis Greenways were walking, running or jogging, cycling and skating, relaxing, swimming, basketball, tennis and cycling. Relaxing in Zhang's study includes walking, people-watching, sitting and chatting. Similarly, Lindsey's study found that health and fitness was the reason for using greenway trails partly because of the quality of maintenance and trail features indicating the needs for more drinking fountains. The most common activity was found to be the usage of trails at least more than three times per week.

Interestingly, this findings were also in agreement with Wrigley's (2002) study which highlighted the issues of non-use, hence among the strategies to increase usage was through creating more appropriate facilities like children's playground, enhancing safety within space which are close proximity to surrounding water and bushes, providing diversification to site such as the inclusion of gas or electric barbeque facilities near picnic tables, provision of toilets and picnic tables closer to parking zones, providing direct disable access, outdoor class based activities for school groups or for other special occasion activities such as small group weddings in the park, reduction in display plant material (to lower operational costs), signage enhancement, designating walks or jogging trails which could also supply educational information about specific plants etc and finally, implementing guided walks policy 'Friends of the Parks' groups as have been implemented by the *Taman Lembah Kiara*'s 'Friends of Kiara' community group.

Based on this study, Malaysian park users' do not prefer smaller parks, they do not like to fish in the park or walk their pets to the park. At the same time, the positioning of trails and pavements was regarded to be fairly important, and finally majority of the park users' agrees that the park is useable when the areas within the park are properly designed. In term of frequency of use among park users', the result from this study confirms the study done by Arnberger (2006), where Arnberger posits that by providing information about daily, weekly or even yearly use

pattern, it could indicate the types and needs for recreation facilities indicating different use pattern towards recreational facilities, plans and management actions. In light of these matters, this study on the other hand indicated that recreation use among Malaysian park users is more concentrated between late morning and late afternoon especially during weekends with the presence of bicyclists, joggers, walkers and dog walkers. With this data, park management can tailor direct or indirect measures to address specific user groups to reduce user conflicts or crowding perceptions.

In this study, park users only use the Neighbourhood Park within one hour while only minority visited the park full day. This could indicate that Malaysian warm and highly humid climate could most probably defer park users from using it for longer hours during the day. On the other hand, park distance does seem to be related to the length of stay for Malaysia park users. This is because, based from the result, even those who were identified to be living more than 5km away from the park, visited the Neighbourhood Park at least on every weekends.

This result supports the existing study by Gobster (1995) and Kaczynski et al. (2008), where in Gobster's study, even 8km of local trail would be too far especially for older adult users (more than 55 years old). Gobster's study suggest that local trails should be connected directly to the metropolitan trails system because it consistently meet every day users' needs towards recreation, commuting and access to nature. Small loop trails that pass through parks and neighbourhood on the other hand, will be more useful and cost effective on a daily basis needs. Similarly, Kaczynski's study contends that size and distance to the park itself were not significant.

In other similar study done by Neuvonen et al. (2007) on Helsinki's residents in Finland it was found that a good amount of green areas and easy access or short distance to a natural environment will increase the number of visits to any green environment. Close-to-home nature should be an indicator of the success for planning a new housing areas as well as developing old suburbs where the green environment should be valued as a remarkable source of health and well-being for the residents to help achieve more satisfying and happier lives.

Similarly, this study supports the study by Gomez and Malega (2007) where their findings suggest that factors associated with ethnicity, socio-economic status, park alternatives, and neighbourhood characteristics do affect park use. Gomez's findings also indicate that measures of distance to the resource do not significantly impact park use or perceived park use benefits.

CONCLUSION AND RECOMMENDATION

The main conclusion of this paper is the importance of predicting and explaining the use pattern relationship towards achieving a quality Neighbourhood Park. A confirmatory factor analysis model was proven fit against the data collected as shown in Figure 1.4. This structure will also give the impact to the current body of literature as it will test the selected variables from the current findings developed by various Western scholars within the field of Landscape Architecture and Park and Recreation Management, and it can be further developed as a single structure model to be tested against any context or environment. It will be the guidelines or criteria suitable for any park designer or Landscape Architect in their work for understanding use pattern aspect of park users in Neighbourhood Park. Several hypotheses may be developed and tested to explore the relationship among variables. In addition, it can be hypothesized that a better understanding about the use pattern of park users will contribute to the development of a quality Neighbourhood Park and its better use.

The tested instrument should be of interest to landscape architects, park designers, urban designers, city planners, architects, developers as well as any other professional involved in the development of a new residential neighbourhood from the public or the park users' point of view. It could be a tool with the best variables tested to be considered for a quality neighbourhood park in an urban context, combining the design attributes as well as understanding the overall neighbourhood satisfaction level, looking into gender, socio-economic status and the cultural background aspects in a neighbourhood park settings. Hence, it should help designers promote qualities and to hinder dissatisfaction about residential green open spaces and thereby help to enhance community development socially, mentally,

physically and spiritually. Different forms of open spaces require a range of appropriate benchmark standards (Doick et al., 2009). It will help designers and developers to evaluate their residential and community design options and to generalize in order to optimize quality towards their outdoor settings which are closely related to the requirements from its users.

In simple terms, this study has developed confirmatory model that has taken into consideration relevant and important researches on use pattern in neighbourhood park research. Although quality in the field of recreation and tourism often managed to subscribe to many management and marketing researches, quality in the field of landscape architecture and recreation remains limited. Due to both theoretical and practical significance, the use pattern measurements in achieving the quality Neighbourhood Parks is a tool to help achieve a deeper and more comprehensive understanding on quality towards green open spaces as to increase the quality of life among users.

The use pattern criteria developed through this review can be universally adapted, because it provides a very relevant framework for research in the area of landscape architecture, park and recreation management, urban forestry, and urban planning. At every level of the Malaysian government, recreation and park facilities have captured increasing interest and involvement from all parties and agencies concerned. However, the contribution has not been documented properly (Abdul Malek and Mariapan, 2009). The following research directions could be taken into considerations: (a) the reliability and validity of the construct listed could further be tested and improvised to suit the relevant surroundings; (b) opportunity to test the goodness of fits test in SEM; (c) the model can be further used to device survey instruments; (d) further research questions or hypotheses could be addressed based on this structural model; (e) the results from the model could help future park planners and designers to adopt some basic quality requirements for a better park design and utilisation.

The role of a park is also very important in increasing the quality of life of the people especially in urban areas. Apart from that, meeting basic human needs towards urban open spaces in the urban landscape environment is important in order to achieve quality of life and developing the quality of a Neighbourhood

Park. This paper has focused on measuring Malaysian park users' use pattern aspects in the Neighbourhood Parks setting which can be transformed into a quality Neighbourhood Parks indicator for Malaysia. Currently, there is no specific tool and assessment within the Malaysian housing and local authority level to measure the use pattern aspect of the Neighbourhood Parks. This assessment tool or instrument has been tested using the current and important theories as well as past studies. It should not only reflect the interests of professionals responsible for planning and management of Neighbourhood Parks, but should also meet the needs and use pattern of the general public. The valuation of Neighbourhood Parks must start from the appraisal of the needs, wants, use pattern and beliefs towards sustainable city strategies which are in fact the primary intentions of this paper.

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