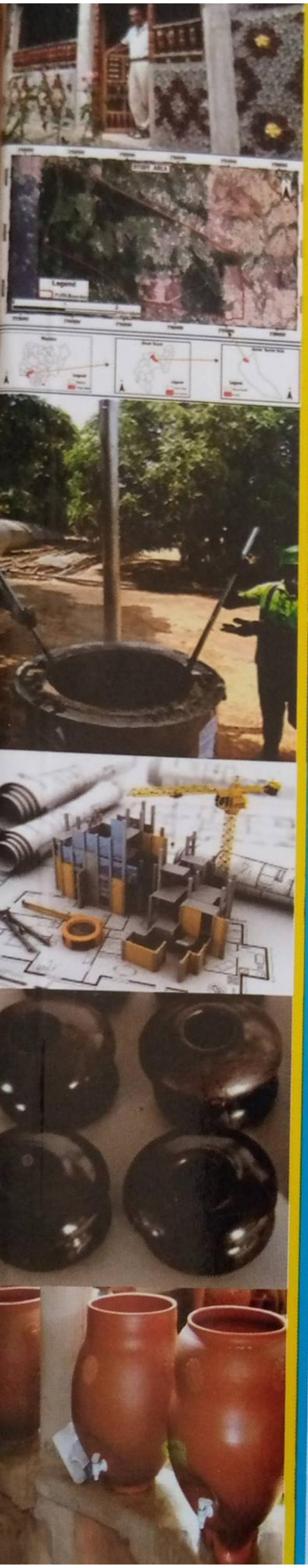

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Evaluation of Factors Influencing Perceived Access to Urban Recreational Parks in Abuja Metropolitan City, Nigeria

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Key Words
Abuja, Access, Recreation, Social attributes, Urban parks

Abstract

Existing study on perceived access to urban parks have given so much emphasis on physical attributes to the neglect of social attributes of accessibility. In order to bridge this gap, this study examined the social attributes of park accessibility in Abuja metropolitan city. Data were obtained from leisure visitors who were selected using purposive sampling in three urban parks in Abuja namely: **Millennium Park (Maitamaneighbourhood), Sunrise Park (Wuse 2neighbourhood) and Magic Land (Lugbe road Area One)**. 250 questionnaires were administered in each park in the evenings on week days and morning and evenings onweekends for two weeks, which yielded a return rate of 43.46% (**326). To address the two research questions, descriptive analysis of socio-demographic variables, multiple regression analysis,** cross tabulation and chi-square (α) with Eta and Gamma statistics, and Mann-Whitney U test were conducted. The findings of the study among others revealed that only knowledge dimension and transport dimensions of perceived accessibility significantly influence access to urban parks in Abuja city. Furthermore, only gender, income level, and occupation influence access to urban park in Abuja city. This study therefore emphasizes the importance of taking social dimensions into consideration by urban planners and landscape architects as a holistic way of improving access to urban park.

Introduction

In the last two decades, Abuja city, which is the federal capital territory of Nigeria has witnessed unprecedented population growth occasioned by increased migration of people from rural areas and other towns. This is not surprising because it has been envisioned that over 70% of the world population is predicted to reside in cities by 2050 (UNFPA, 2011). This projection is already becoming a reality as Abuja city which was originally planned and developed to accommodate 3.2 million population is now housing well above its original envisioned population growth, and the day time population most times reaches up to 7 million (Iro, 2007; Ismaila, 2014). Indeed the city's growth rate of 8.32% per annum makes it the fastest growingcity in Africa (Myers, 2011). The ever increasing population growth in Abuja has resulted to a wide range of competing urban landuse which has worsened the challenge of meeting the demands for urban green infrastructure such as urban parks and its associated accessibility issues.

According to Byrne et al (2009),previous studies have affirmed urban park accessibility as a key to guiding green space allocation in urban communities, and also a notable variable used in explaining park visitation. Thus, if urban planners are to efficaciously take the varied needs of urban parks into consideration, accessibility concept and its dimensions are important aspects that should be properly understood, in addition to their roles in influencing the park use decision making process.Adequate access to urban parks and green space offers variety of benefits by creating natural environments that reduce stress, facilitate recovery from mental and physical stress, encourages physical activity to combat increasingly sedentary lifestyles, promotes the development of social capital and the fostering of sustainable urban livelihoods (Chiesura, 2004; Bedimo-Rung et al., 2005;Cohen et al., 2007; Byrne &Wolch, 2009). Byenabling socialization thereby building community inhabitants ties, parks contribution to

the improvement in urban dwellers quality of life cannot be overemphasized (Comber, Brunsdon, & Green, 2008; Wendel, Zarger, & Mihelcic,2012). These enormous values of urban parks cannot be enjoyed if parks are not reasonably accessed by urban residents. Therefore, providing urban dwellers with adequate and equitable access to parks is in the best interest of urban planners (Dony, Delmelle, & Delmelle, 2015).

Nonetheless, academic attention on urban park access over the years has largely focused on the physical dimension, neglecting the non-physical dimension such as the social aspects. Also, few literature on park accessibility are predominantly on developed countries, thereby indicating a scarcity of studies on developing countries particularly Nigeria which is known as a highly diversified heterogeneous society. With the experience of increasing development of urban parks and other recreational areas in Nigeria, addressing this gap is highly necessary. Thus, the main objective of this research is to examine the factors affecting access to urban parks in Abuja city, with a view to understanding sound dimension to parks patronage for effective policy formulation. Given this objective, the study seeks to answer the following research questions.
(1) To what extent do the dimensions of accessibility influence perceived access to urban parks in Abuja city?
(2)To what extent do the socio-demographic characteristics of park visitors influence perceived accessibility to urban parks in Abuja city?

Literature Review/Theoretical Underpinning

Examination of park accessibility factors will not be holistic by considering only the physical dimensions without the inclusion of the non-physical factors such as the socio-personal dimensions (Brown, 2008; Gregory, Johnston, Pratt, Watts, & Whatmore, 2009). The physical dimension is the most established determinant of access to urban park, which is explained by the number of available parks and size, their proximity/distance, park facilities and walk ability (Maruani & Amit-Cohen, 2007; Nicholls, 2001; Oh & Jeong, 2007).

Park quality and quantity are seen as a pertinent element of the physical dimension. McCormack et al(2010) opined that park qualities consist of certain metrics that describe park amenities and maintenance, and have significant influence on park visitation. It also comprise of some internal features such as lighting, signage, locations of facilities, program and activities, internal and external landscaping, that operate within the parks and contribute to the experience of park visitors (Gobster, 1995, 1998; Reynolds et al., 2007). Urban park quantity on the other hand refers to as park acreage metrics, which is the number or size of parks and recreational facilities within a neighbourhood. These kinds of metrics have been widely researched in the equity mapping literature (Boone et al., 2009; Vaughan et al., 2013).

The studies of Giles - Corti & Donovan(2002), Bedimo-Rung et al(2005), Cohen et al(2007) and Grow et al(2008) found total park acreage and number of parks in a neighnourhood, which can be interpreted as urban park proximity to place of residence as an important determinant of park visitation. Equally, Giles-Corti et al. (2005) found that distance and park size are two essential factors connected with the possibility of visiting and using urban parks. While the proximity-based approach suggests that cities initiate incentives to reduce physical distance between neighbourhood inhabitants and parks, modern cities are struggling with a scarcity of land area for new parks, and shortfalls in their budget (Park, 2016).

Nowadays, park accessibility is regarded asa comprehensive concept for measuring the potential of park use by considering accessibility and usability as an integrated concept (Park, 2016). Quite a number of scholars have opined that the frequency of usage of urban parks are hinged on a combination of factors, particularly on the combination of proximity, quality and quantity of greens pace (Cadieux, 2008; Tyrväinen et al., 2007). Studies have also discovered the closeness of urban parks to place of residence and office environment as a veritable predictor of greater chances of parks efficient utilization(Oh & Jeong, 2007; Bennett, Yiannakoulias, Williams & Kitchen, 2012).

Naturally, inhabitants of a neighbourhood would always prefer to have urban parks close to their homes so that they can easily gain access either by foot or a short distance travel using any mode of transportation. So, where this is impossible, a distance-decay function exists, making the appeals of parks patronage decline with increased distance. Thus, from a rationalistic standpoint, people tend to prefer a less than 10 minutes' walk to parks (McCormack et al., 2006). Situation where people are somehow far away from available parks, more often result to less access, usage and patronage (Kaczynski et al., 2009). Furthermore, the so-called compensation proposition suggests that people walk or travel longer but less frequent visits to a park or green space further away from home or offices, but cover shorter distance and more frequent visits if the park or green space is close (˘Zlender& Thompson, 2016).

Car ownership, travel cost and travel time are key aspects of the transport dimension. Travel time in particular represents one of the conventional variables that measure accessibility as a function of geometric origin based on Location Theory and Central Place Theory (Hass, 2009; Marten & Gillespie, 1978). A study on parks in the Cleveland area of United State established that non-users of outdoor recreation areas would increase their visitation to parks if transportation access was provided (Scott & Munson 1994). In addition, another study in Cleveland found regional transportation systems to be a factor responsible for lower visitation levels for Blacks (Payne, Mowen & Orsega-Smith, 2002).

Although spatial-physical standards and conceptualization of accessibility offers a simple way of perationalizing it, the intricacy of the concept will not be completely addressed if other necessary socio-personal factors such as information barriers, gender ideologies, and financial and cultural barriers are ignored (Ferreira & Batey, 2007; Gregory et al., 2009; Bisht, Mishra, & Fuloria, 2010). One of the non-physical factors under socio-personal characteristics is the knowledge dimension, which deals with visitors' knowledge of location, programmes and activities and facilities in a given park. Another important non-physical factor is the social dimension, which encompasses user-based variables such as neighbourhood characteristics, perception of safety, and personal sense of belongings to the community, social exclusion or inclusion, and cultural differences, which are linked with park access (Chiesura 2004; Lockwood, 2005; Chen & Jim, 2010). According to Koohsari (2013) and Westley, Kaczynski, Stanis and Besenyi (2013), people's perception of neighbourhood safety from all forms of crime, neighbourhood road network functionality and availability of amenity in many ways affects the frequency of park usage. Moreover, evidence abound that the discriminative policies of the past have resulted in socio-economically and racially sidelined communities been deprived of parks in their neighbourhoods, thereby increasing their travel time and distance to parks and reducing access and frequency of park usage (Harnik & Simms, 2004; Abercrombie et al., 2008; Chang & Liao 2011).

The personal dimension of urban park access is associated with socio-economic features of residents such as available time for leisure, residents' lifestyle, financial and health status (Wang et al., 2015). Byrne & Wolch (2009) opined that park access is influenced by individual's socio-economic variables such as age, gender, income education and ethnicity. People with a higher income, economic status and level of education have better access to parks, often located near their homes (McCormack et al., 2006).Urban parks in lower income communities are of lower quality and suffer from poor government maintenance(Miyake et al., 2010; Smoyer-Tomic et al., 2004; Timperio, Ball, Salmon, Roberts, & Crawford, 2007). Evidence suggests that some areas lack access to green spaces and access is associated with the socioeconomic status of residents with lower-income groups having significantly less access to park (Wolch et al., 2014).

Research Method

Three (3) urban parks were selected from fifty-eight (58) public and private recreational parks in the Federal Capital City, Abuja for the purpose of this study. They are **Millennium Park (Maitama neighbourhood), Sunrise Park (Wuse 2 neighbourhood) and Magic Land (Lugbe road Area One). They were selected because they are the most organized and well visited parks in the city (Department of Parks and Recreation, FCTA, 2016) (also see figure 1). The research instrument for this study was a survey questionnaire developed by** drawing variables from various articles relating to park visitation and accessibility. The questionnaire which was made up of two sections initially contained 55 questions before the conduct o the pilot study. The first section has questions that requested for socio-demographic information of park visitors. The second part was for park accessibility factors and it was divided into section A and B, with section A posing questions on the transport dimension, and section B having likert scale questions (1 = 'strongly disagree' to 5 = 'strongly agree') on other park accessibility dimensions, which include: physical dimension, knowledge dimension, social dimension and personal dimension. The third part of the questionnaire contains questions on perceived accessibility construct which was measured using a likert scale (1 = 'very easy' to 5 = 'very difficult'). The indicators used in measuring the constructs were derived from the study of Wang et al., (2015), Rigolon (2016) and Park (2016).

The questionnaire was pilot tested on 48 samples of parks visitors in two parks (Millenium Park and Magic Land) in Abuja in order to further strengthen the reliability of the instrument. Two indicators were deleted from each of perceived accessibility construct, physical dimension construct and knowledge dimension construct. One indicator was removed from social dimension construct, which reduced the entire questions to 48 for final survey. Information on influx of visitors to parks was not available

in the Department of Park and Recreation that is statutorily in charge of park management in Abuja city. Also, the record of monthly patronage of the parks was not provided by the parks. Hence, sample size could not be determine from a population of patrons. However, the researcher opined that a reasonable sample size of 500 persons will be sufficient enough to address the research questions, which led to the production of 750 questionnaires for administration.

Data were collected in the three selected urban parks, and park visitors were the target group. Thus, the researcher visited the parks in the evening on week days and morning and evenings on weekends to administer the questionnaire for two weeks. In each park, 250 questionnaires were given to the park visitors, and they were asked to drop the filled questionnaire with the security guards at the entrance gate of the parks. Out of the 250 questionnaire copies administered in **Millennium Park, Sunrise Park and Magic Land Park, a total of 143, 86 and 97 were returned respectively. In all, a total of 326 questionnaires were returned.**

Data were screened for missing value, unengaged responses and outliers. Only four case of missing values were discovered. For unengaged response particularly on the likert scale section of the questionnaire, 12 cases were deleted because of issues of unengaged responses, thereby reducing the cases to 314. The deleted cases have standard deviation less than the required minimum of less than 0.5. The data also show outliers in some variables which were detected through the outlier labeling techniques and they were taken care of using the winsorising techniques, which made the dataset relatively free of errors that could have affected the results of analysis.

Descriptive analysis of the socio-demographic variables was firstly conducted after data screening, and then followed by exploratory factor analysis of the accessibility constructs, in order to determine the indicators that truly provide a good measure of the constructs. Thereafter, each of the accessibility factors in Likert scale section was transformed into a single value using the compute function in SPSS for ease of analysis before two separate multiple regression analysis were performed to address research question one. Then cross tabulation and chi-square (α) with Eta and Gamma statistics, and Mann-Whitney U test were conducted to address research question 2 and 3 respectively.

MAP OF ABUJA SHOWINING RECREATIONAL PARKS

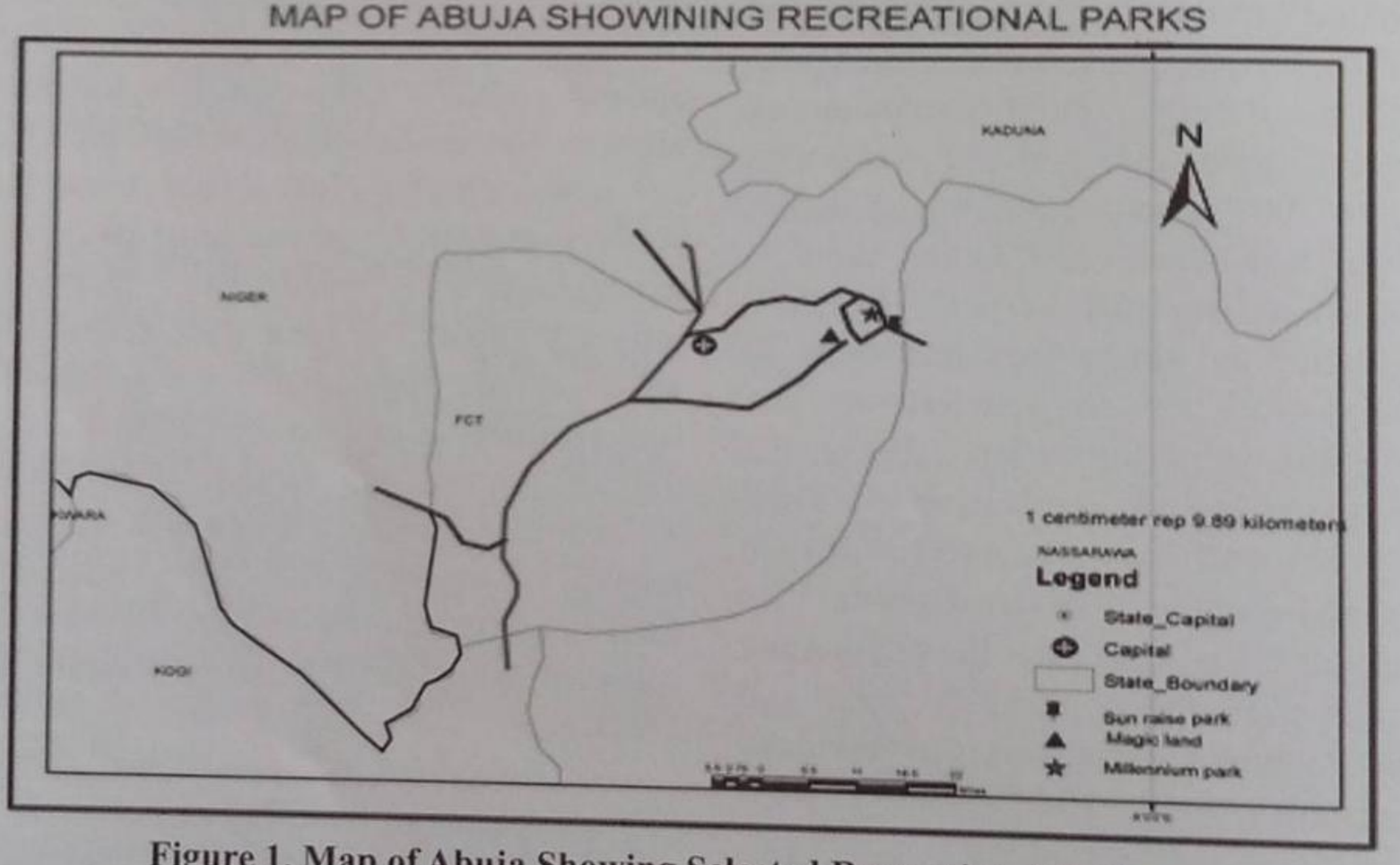

Figure 1. Map of Abuja Showing Selected Recreational Parks

Results and Discussion

Socio-Demographic Characteristics of Urban Parks Visitors in Abuja City

The results of the socio-demographic composition of park visitors in Abuja metropolitan city indicate that male visitors were slightly higher than female users by 7%. In this case, 168 (53.50%) (See Table 1) were male and 146 (46.50%) were female. Majority (88.80%) of urban park visitors are in their youthful age of between 15 – 45 years. Furthermore, the result also show that 52.50% of respondents are single, 43.30% are married and very few (3.2%) of them are divorced. In terms of their educational attainment, a large (83.4%) proportion of

survey participants were holders of tertiary institutions certificates. Further results show that majority 168 (53.50%) of the park visitors are civil servant, followed by self-employed, private sector, and traders (20.10%, 18.01%, and 8.3%)orespectively.

Additionally, the result signifies that parks visitors cut across low income earners, medium income earners, and high income earners. Specifically, 35.70% of park visitors earn less than N60,000 and they are considered as low income earners in Nigerian context, 35.70% earn between N61, 000 – N120, 000, and they are classified as medium income earners, while 28.0% earn above N120, 000, and they are categorized as high income earners in Nigeria. The result of household size of park visitors indicate that majority (48.70%) have between 4 to 7 children, then followed by 32.80% with less than 4 Children, and very few (1.90%) have children above 12.

Table 1: Socio-Demographic Characteristics of Parks Visitors (N = 314)

S/No	Respondents Characteristics	Frequency (%)
1	**Gender**	
	Male	168 (53.50%)
	Female	146 (46.50%)
2	**Age**	
	Less than 15yrs	9 (2.90%)
	15-30yrs	143 (45.50%)
	31-45yrs	136(43.30%)
	Above 45yrs	26 (8.3%)
3	**Marital Status**	
	Single	165 (52.50%)
	Married	139 (44.30%)
	Divorced	42 (3.2%)
4	**Educational Status**	
	Primary	9 (2.9%)
	Secondary	34 (10.8%)
	Tertiary	262 (83.4%)
	Quranic	9 (2.9%)
5	**Occupation**	
	Civil Servant	168 (53.50%)
	Traders	26 (8.3%)
	Private Sector	63 (20.10%)
	Self Employed	57 (18.01%)
6	**Monthly Income**	
	Less than ₦60, 000	112 (35.70%)
	₦61, 000 – ₦120, 000	88 (28.0 %)
	Above ₦120, 000	114 (36.30%)
7	**Household Size**	
	Less than 4 Children	103 (32.80%)
	4 – 7 Children	153 (48.70%
	8 – 12 Children	52 (10.60%)
	Above 12 Children	6 (1.90%)

Source: Authors Field Survey Analysis, 2016

Transport Dimension of Accessibility

Table 2 shows that, 52.2% of the park visitors are owners of personal vehicle, which they often use in visiting the parks, while 47.8% do not own personal vehicle and had to rely on any available public transport to take them to the selected parks in Abuja metropolitan city. The Table indicates that over 60% of parks visitors spent at least between 5minutes and at most 30minutes to get to park of their choice. This implies that the parks are well connected to good roads and characterized by less traffic bottlenecks, thus, providing quick access to parks.

Morever, Table 2 shows that it cost 77.7% of parks visitors between 100 naira to above 400 naira to travel from their homes to the selected parks in Abuja.

Table 2. Transport dimention of accessibility (N = 314)

S/No	Transport dimension	Frequency (%)
1	**Private vehicle ownership**	
	Yes	164 (52.2%)
	No	150 (47.8%)
2	**Time it takes to get to park using percieved transportation mode**	
	Less than 5mins	34 (10.8%)
	5mins - 15mins	117 (37.3%)
	15mins - 30mins	99 (31.5%)
	Above 30mins	64 (20.4%)
3	**Cost of getting to park using percieved transportation mode**	
	Less than 100 naira	70 (22.3%)
	100 - 200 naira	114 (36.3%)
	200 - 300 naira	79 (25.2%)
	Above 400 naira	51 (16.2%)

Source: Authors Field Survey Analysis, 2016

Contribution of Accessibility and Transport Dimensions on Perceived Access to Parks in Abuja City

Table 3 presents the result of model 1 which examines the relative contribution of physical, knowledge, social and personal dimensions of accessibility to perceived access to urban parks in Abuja using multiple regression analysis. The result shows that only the knowledge dimension appears to be highly significant (0.000 ($p < 0.001$)); contributing 18.7% of the overall variance in predicting perceived access to urban parks in Abuja.

The second regression model is presented in Table 4. As indicated in the table, the regression of the sub-dimensions of transport dimension with perceived access to parks in Abuja indicate that the time it takes to access parks is of interest to park visitors, and the result shows that it is only the sub-dimension that is moderately significant. However, its contribution in predicting access to park is meager as its explained only 6.9% variation in model 2. Other sub-dimensions of transport dimensions did not predict the model as their p- values are neither lower than 0.001 nor lower than 0.05.

The relatively low predictability of perceived access by both knowledge and transport dimensions shows that there are other silient factors accounting for the variation in accessibility to parks in Abuja city that have not been explored. While the knowledge dimension is the most important factor, the physical dimension is the least important in influencing access to parks in the study. This implies that in holistically looking for ways to improve access to urban parks, physical dimensions alone will not provide the needed results, but the inclusion of social dimensions is also pertinent. This will go a long way in improving urban park patronage and enhancing its sustainability. This result disagree with previous studies such as the findings of Nicholls, (2001) and Wang et al, (2015), where physical dimension particularly distance to parks and other locational features were the most important determinants of access to parks.

Having adequate knowledge of inhabitants environment has shown to be a very important factor in this study. Unlike other findings that have given much support to physical dimension, despite the planned nature of Abuja metropolitan city, one would have least expected that knowledge of the availability of parks will stand out above other well established components of physical dimensions in influencing access to parks in the city. This implies that perhaps the Department of Parks and Recreation of the Federal Capital Territory, Abuja is doing well to educate the city dweller of the availability of these parks and the need for patronage. The relevance of knowledge was given

credence by Hannibal and Vedlitz, (2018) as they noted that studies on environmental knowledge have establish that knowledge is an essential motivator in changing environmental behaviors and attitudes. Furthermore, D'Souza, Taghian, and Lamb (2006), Mostafa (2007), Cheah and Phau (2011) opined that individuals who are more informed about environmental problems or issues are more likely to exhibit "green" behaviors and attitudes such as conservation and green consumption.

Table 3. Model 1: Multiple Regression Model of Contribution of Four Accessibility Dimension on Perceived Access to Urban Parks

Accessibility Dimensions	Standardized Coefficient (β)	t-value	P	Sig. Level
Physical dimension	0.079	1.306	0.193 (P > 0.05)	Not significant
Knowledge dimension	0.405	6.061	0.000 (p < 0.001)	Highly significant
Social dimension	0.058	1.069	0.286 (P > 0.05)	Not significant
Personal dimension	0.009	0.158	0.875 (P > 0.05)	Not significant
N	*314*			
R	*0.197*			
Adjusted R^2	*0.187*			
F	*18.975*			

Note: *P < 0.05, **P < 0.01, ***P < 0.001

Table 4. Model 2: Multiple Regression Model of Contribution of Transport Dimension on Perceived Access to Urban Parks

Accessibility Dimensions	Standardized Coefficient (β)	t-value	P	Sig. Level
Ownership of private vehicle	-0.034	-0.612	0.541	Not significant
Time it take to visit parks	-0.203	-3.149	0.002	Moderately significant
Cost of getting to parks	-0.118	-1.836	0.067	Not significant
N	*314*			
R	*0.078*			
Adjusted R^2	*0.069*			
F	*8.759*			

Note: *P < 0.05, **P < 0.01, ***P < 0.001

Influence of Socio-Demographic Characteristics of Park Visitors on Perceived Accessibility to Urban Parks in Abuja City

Table 5 reports the result of chi-sqaure statistics that examines the effect of socio-demographic variables on perceived accessibility. In the table, its evident that only three (3) of the seven (7) socio-demographic variables significantly influenced perceived access to urban parks in Abuja city. Specifically, gender with a chi-square value of 34.609 significantly influence visitors perception of accessibility to parks because the obtained p-value (***P < 0.001) is highly significant. However, a relatively low Eta value of 0.332 indicates that the strength of the association between gender and perceived accessibility is weak as the value is lower than 0.500 threshold but greater than 0.1. Also, with a high chi-sqaure value of 64.466, and a higly siginificant P-value (***P < 0.001), income level of park visitors has shown to have significant influence on perceived access to urban parks, but a 0.262 Eta value indicates a weak relationship between income and perceived accessibility. Occupation of park visitors also significantly drive perception of accessibility with the highest chi-square value of 68.814 (p-value is less than 0.001). Moreover, Gamma statistics result (-0.179) indicates a weak negative association between occupation and perceived accessibility.

Other socio-demographic variables such as age, marital status, and household size did not showed any significant

effect on perceived access. Although, this study did not go further to check for the distinction between male and female in terms of access, past studies had shown that no significant differences were found between male and female (Ho et al., 2005). Consistent with previous findings, the results of this study agree with that of Wang et al.(2015) which established that access to parks is associated with the socioeconomic status of residents with lower income groups having less access. In addition, Liu et [illegible] 2015) noted that people with higher income tended to [illegible] more hoursand thus have less opportunity to visit re[illegible]ational parks. Also, previous studies have also shown th[illegible] income is the most influential factor affecting pe[illegible] spark visitation, and that a population sample with higher income are significantly more constrained by lack of time (Dino et al., 2013).

Table 5. Chi-Square Statistics of Socio-Demographics With Perceived Accessibility

Socio-demographic & perceived accessibility	Chi-square Value	Eta Value	Gamma Value	P-value	Significant level
Gender	34.609	0.332		0.000	Highly significant
Age	31.848		-0.054	0.131	Not significant
Marital status	32.242	0.198		0.080	Not significant
Educational status	34.448	0.170		0.077	Not significant
Income level	64.466	0.262		0.000	Highly significant
Household size	21.855		0.1116	0.148	Not significant
Occupation	68.814		-0.179	0.000	Highly significant

Note: *P < 0.05, **P < 0.01, ***P < 0.001

Conclusion

The emergence of knowledge of urban park availability as a key driver of access to recreational in Abuja metropolitan city is confirmed in this study. This has given support to the views of many landscape planners that parks should be readily available and people should be made aware of their presence in different neighbourhoods of a town and city. Therefore, whether the Department of Parks and Recreation of the Abuja city has supported the ides of awareness campaign or not, the finding of this study has provided a veritable platform for a thorough and well-focused campaign to educate people on the availability of different categories of parks in the city, with emphasis on the purpose which each park is serving and benefits associated with their frequent usage. If this work out fine and patronage increased, it is expected to enhance emotional and psychological well being of the visitors and increase revenue through entrance fee charges.

From urban planning perspective, the findings of this study suggest that relying exclusively on objective accessibility metrics which can be called "physical dimension" may not guarantee increased patronage of urban parks if thorough exploration of socio-personal dimensions, which are emotional in nature are ignored. Thus, to holistically address accessibility issues in urban parks, embracing the findings of this paper should be of interest to urban planners and landscape architect who are professionally saddle with the responsibility of ordering the use of land for human comfort. From the foregoin

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