

Open Space in Dhaka: Identifying the Factors of Public Inaccessibility

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Abstract: An open space can only become successful by ensuring accessibility accurately. In the language of planning, open space can only become successful after achieving accessibility for each and every people of society. Increasing demand for housing and other facilities from rapid population growth has been a strong reason for the decrease in open spaces. This study tries to represent the existing open space accessibility condition of Dhaka city, by studying a playground and a park. To explain the aspects of accessibility, this research focuses on public accessibility instead of place accessibility. Several reasons behind inaccessibility, such as- social, economic, cultural, and environmental aspects have been discovered in detail. In regard to determining the prohibiting factors, both user and non-user group data have been assessed from a fixed catchment area. Factors that affect the people most with its impacts and create inaccessibility in spite of having open spaces in close proximity are the main issues focused on this article. Along with the primary survey results of a playground and park, this study has also included model-based theories to determine the findings. Findings show that accessibility declines mostly for safety issues, restrictions, and close association with travel expenses to reach there. The ultimate output of the research can be stated in one sentence that, accessibility is not only the thing which can only be described by proximity or physical distance but also public accessibility, which is the most significant determinant for using any open space.

Introduction

For encouraging a variety of physical activity behaviors; parks, playgrounds or green open spaces are significant elements in a neighborhood (Koohsari et al, 2015). The visible components and functions at any open space may bring several effective changes in life, e.g. - better health, improved social cohesion, and economic benefit. (Nasution & Zahrah, 2014). In urban planning, characteristics like quality and quantity of any open space of a community are considered as eliciting for increasing public attachment. The spatial configuration and number of parks and their approachability determine their potential access for general people (Chen et al, 2017). Neighborhood parks can be flourishing and responsive through the presence of mass people by the self-reinforcing process. For this reason, accessibility can be better addressed and defined if measures can be taken into account in terms of time, cost, distance, or population for neighborhood planning (Tabasssum and Sharmin, 2013). Neighborhood people are the significant role players for those parks on the basis of their perceptiveness and usage from socio-economic status, cultural pattern and overall lifestyles (Gobster, 2001; Carmona *et al.* 2003). Therefore some attributes (image and comfort, linkage and access, activities and usage) may also strengthen the responsiveness of open spaces depending on the neighborhood (Tabasssum and Sharmin, 2013).

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‘Appearance of’ and ‘Accessibility to’ urban open spaces has been well defined in various studies, as lack of it is can exaggerate the disability of a city (Rashid, 2003). Upon till now, especially in megacities, the amount of public spaces are decreasing day by day and losing approach due to lack of preservation. Several discussions already have been made on public open spaces from the developed countries, however only a few discussions have represented about developing world. In urban areas, ideas about open spaces are old but a more contextual analysis with proper acknowledgement of the supplies and boundaries; paths for public open space planning in a sustainable way in Bangladesh may get revealed (Afroz, 2009).

Concept of accessibility and its measuring models

The key components of accessibility can be defined with three features; it needs to be physically or structurally accessible, socially accessible and compulsorily should have free using scope for general people. (Benn and Gaus, 1983). Developed country contexts treat “distance” as the major factor for measuring accessibility. Maruani and Amit Cohen (2007), identified accessibility as one such parameter that has the capacity of addressing public needs (Maruani and Amit-Cohen, 2007). Defined as the ease with which people can reach desired activity sites (James et al., 2009), accessibility has been widely used as an significant indicator to evaluate the extent to which planning has been able to adequately respond to population’s demand for urban open space.

Yang et al, 2016, stated three measures of accessibility. **Simple proximity measure** includes minimum distance and travel cost which automatically gives locational benefit for people to reach and access open space. In this study, minimum travel distance and travel costs have been considered for measuring accessibility. The **gravity model** is evaluated on the basis of attraction, and friction factors. Attraction factors are described by the characteristics of the destination, such as size and amount of facilities, which can provide more comfort to the users, and friction factors are based mostly on distance and cost of reaching at the destination. Both attraction and friction factors have been gathered to justify the accessibility situation of study areas. The **utility model** is based on random utility theory. The probability of a choice by individual changes is dependent on the relative utility of the choice (Yang et al, 2016). To justify users’ choice and non-users perception, this study depends on utility model.

Studies from the developed world suggest that around 80% of total users go to public space on feet where proximity is the most significant issue for determining the usage. The accessibility of pubic open spaces is usually simulated as the most significant factor dominating public use within a distance of 300 to 400 meters from a user to an open space accepted as an essential threshold. Above 400 meter distance reduces recurrence automatically (Chen et al, 2017)

In the context of Dhaka, DMDP (1995-2015) fixed standard of 0.16 acres area for parks/open space for per 1,000 populations which is equivalent to the area of 4 parks for

the community services of 25,000 populations as per Urban Area Plan (1995-2005). The Detailed Area Plan (2010) proposed a prime standard of 0.96 acre/1,000 population at neighborhood level Park and play field as 0.32 acre/1,000. Dhaka Structure Plan (2016-2035) recommends 0.86 acre/1,000 population for play fields and 0.25 acre/ 1000 population for community parks.

Problems regarding Open Spaces of Dhaka City

Once Dhaka was called the ‘Venice of the Orient’ for having large open spaces with lushness of nature. With the rapid urbanization, the amount of open spaces is decreasing gradually. Lack of consciousness, initiative and most of all insensitivity of both public and private sectors towards ecology, environment and sociological factors have led to Rapid decline of open spaces and water bodies and increasing loss of accessibility to the open spaces and water bodies (Khan, 2014).

Suchana (2013) described public opinion and expectation of the quality of the parks and greeneries are low in Dhaka. “Whilst other forms of recreation from indoor sports and leisure to computer games are aggressively marketed to urban populations, a visit to local parks can seem a less exciting option. Two —leisure cultures now co-exist; one is represented by the recreational culture of regular park users, parents with young children, teenagers hanging out, joggers, the other is the fitness cultures based on fitness centers, aerobics, swimming pools, etc. While the majority of people walk to parks, the majority of users of indoor leisure facilities drive to them. Fewer and fewer adults and children are walking and cycling and over time this has contributed to the climate of empty green space, empty street”, mentioned by Suchana (2013). She also explained that “Children and young people’s use of the outdoors have become increasingly restricted and consequently has declined in the last fifteen years. Many children and adults have better access to commercial and household entertainment. They are often encouraged to use these facilities because of parental restriction and fears.” Her few more perceptions are as following:

- Lack of quality and maintenance of open spaces: Deteriorated condition and insufficient provision of service facilities; such as- seats/ relaxing space, toilets, and playing instruments for children.
- Higher crime rate and inappropriate behavior: Concern of the presence of drug and alcohol users, unexpected characters that make people feel threatened.
- Hygiene and safety: Concern for safety and psychological issues, such as- feeling of fear and vulnerability.
- Degraded environment: Condition of vandalism, litter and graffiti.
- Disappearance of variety
- Inaccessibility: Due to heavy traffic and unplanned public space location becomes difficult to access smoothly. And thus parents don’t allow their children to go there by own.

- Specific few people are rare users of open space as- elderly group, specially challenged/ disable group, and minor communities.”

Only 21.6% urban poor of Dhaka city can be able to visit museums, zoos, and parks for recreational purposes. Around 50% of kids wanted at least a playfield nearby their accommodation and 85% of children desired to have parks with amusement features within close proximity (around 3.2 kilometers) of their home (Hossain, 2005; Ahmed & Sohail, 2008).

Objectives and Methodology of the Research:

The key research question of this study is to determine the forbidding factors for accessibility of open space. Two objectives corroborate this research question: to determine the present scenario of public accessibility and for identification and explaining the discouraging aspects of inaccessibility of open space. For this purpose, the study has been conducted in a public park and community playground. 120 questionnaire surveys were conducted in the selected study area; 70 for open space users, and 50 for deprived households. The purposive sampling method was followed for selecting respondents. The respondents included the existing user group of selected open space, and irregular user residents from the catchment area. For the identification of non-user groups, the 1 kilometer catchment of open space adjacent area has been selected for this study. Different information, such as- types of activities performed by the users, existing infrastructure facilities of the park were gathered based on a pre-defined checklist. The questionnaire surveys were based on two types of questions (open and close ended) and opinions have been transcribed, tabulated for data analysis. Data have been classified into perceptions and presented in percentage.

Study Area

According to “The Daily Star (2004)”, Dhanmondi Abanhoni Club, which has been occupying the Abahoni playfield for four decades with unauthorized structures and without permission, was turned into a limited company named after Lieutenant Sheikh Jamal in August 2009. Abahoni playground can be considered as one of the safest open spaces of Dhaka city as approximately 90% of users (field survey, 2017) have mentioned their perception positively about it. It has around 26 Bigha of land which is used for practicing cricket, football, and several indoor games also. The community people and the outsider who are enlisted in different sports clubs get the chance to practice their games in the field instead of a monthly fee around 1000-1500 BDT. The local persons also get a chance to play here. There is a football ground, a large number of batting and bowling nets for the players. The national players of Bangladesh Football team also practice here. The guardians of the young players also come with them and enjoy the moments by walking around the field. It is now under construction for the Sheikh Kamal Krira Complex. It was open for a long time but now it has a boundary fence made of iron around the whole of it and only 1 entry point (Field Observation, 2017).

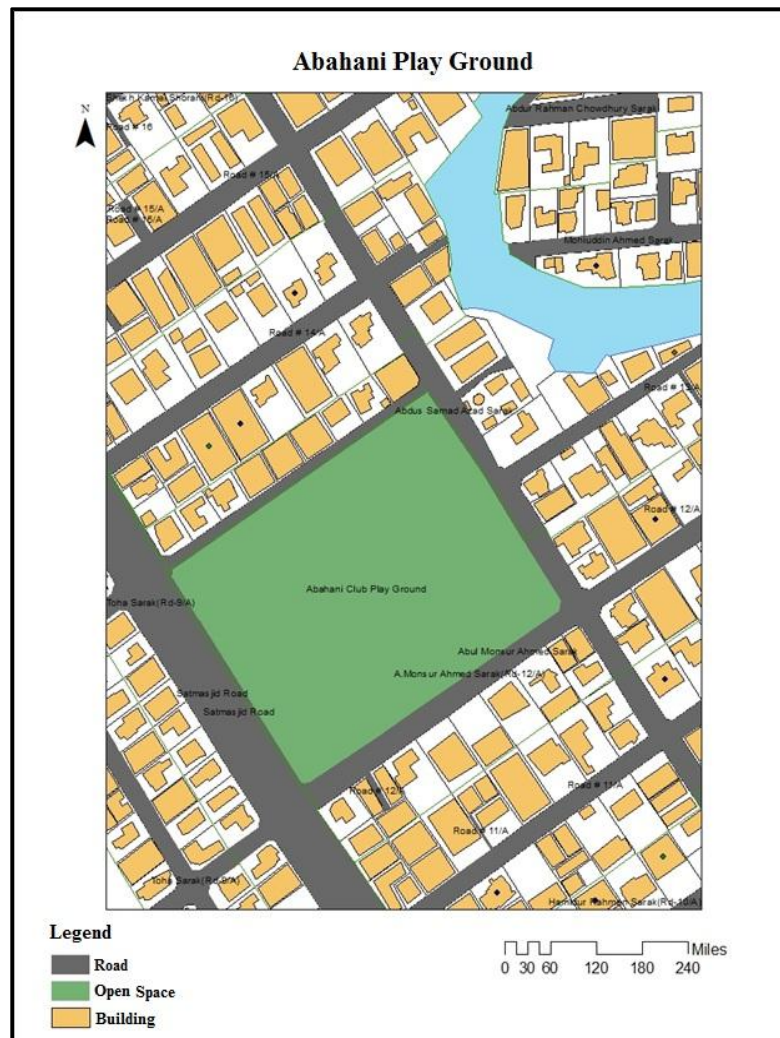


Figure 1: Map of Abahoni Playground

Source: Developed by author, 2017 with the help of DAP, 2014

On the other hand, Mirpur Budhhijibi Shahid Minar Complex is currently being used as an open space which comprises 67 acres land (combining graveyard and monument). The location of this space is in Mirpura Thana, DNCC Ward no 12 (Budhhijibi Complex Office, 2017). The surrounding people come here for jogging whereas adolescents come here for cycling, playing etc. Walkways are completely paved around whole space. According to Buddhijibi Complex Office (2017), comfortable sitting arrangements have been developed here along with two artificial water bodies.

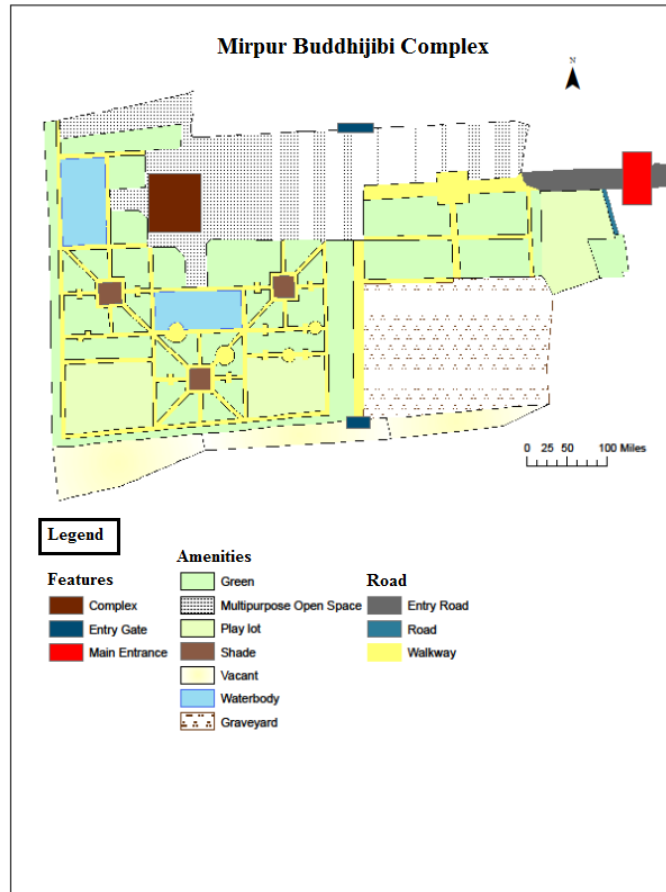


Figure 2: Map of Buddhijibi Shahid Minar Complex, Mirpur

Source: Developed by author, 2017 with the help of DAP, 2014 and Buddhijibi Complex Office

Influencing Factors for using Open Space: Perception of User Group

Due to private ownership, the accessibility of the park was restricted for few months in 2016, but for the declaration of High Court, the construction of the mini-stadium was banned, which might be able to make inaccessibility. Now the park is accessible for all people without the membership of the club also. Most of the users of this playground are male, but females are also influential users. The major age groups of users are 20-30 years who are involved with different clubs for playing cricket and football. Most of the users are well to do with their occupation and upper and middle class from their family background. For this reason, they are capable of paying the club for training fees which is monthly 1500-2000 BDT.

People use the playground in morning and afternoon. In maximum cases, girls visit the playground in the morning for their sports activities and boys' practices sports in the afternoon session. Clubs always fix the schedule of practicing of users with their convenient time and maximum time users depend on them.

Most of the users are interested in using this open space for the attraction of training facilities provided by clubs. These clubs (currently 12 are active) organizes tournaments on a weekly basis, and guardians are mostly interested in the participation of their children in it. Guardians do jogging or simple relaxation by sitting during their children's playtime. People from the internal community people visit the playground in maximum days than outsiders, but they have another option like Dhanmondi Lake, so their visit also limits sometimes. In terms of quality aspect of the study area, the most attractive components have been traced as the playing equipment as paved space and separated porting for playing cricket, green play lot for playing football. Greeneries' over the areas also preferable by the users.

Maximum people reach at the open space by non-motorized vehicles and walking is another most convenient way for reaching of the community users. A 15-minute rickshaw ride is the most desired kind of trip of the users. For disabled people, accessibility conditions are not so good. In spite of disabled children playing here, the structural condition of this playground has not been developed much and a person with a wheelchair cannot enter without anybody's help.

Almost 70% of people think that the playground is accessible for all gender, though few people have answered in negative (30%) on the question of the entrance of transgender people. Maximum people (80%) have answered in positive in the question of restriction and unauthorized occupancy. Little bit problems occurred due to the irritation of thieves, which are not from outside the field or not by professional thieves or hijackers and it is caused only during the match time for keeping problems.

Maximum users are dissatisfied with the present waste management system. There are lacking waste bins and waste collectors and for this reason wastes like packets, paper cartons are kept lying in the field after the afternoon session of playing and morning users have to go through these wastes during their practice sessions. Most of the users are NMT users to reach the open space but walking distance covered users also share a major portion of the total users. The average transportation fee is 40 BDT daily for maximum users, who use this space regularly. But for irregular and long-distance users, a maximum of 300 BDT are required to reach in the open space and they go there for a maximum of 2 days of the week only in the time of tournaments.

Since the playground is now under private ownership, cultural or religious use of open space is strictly prohibited and doesn't hamper the regular user's accessibility. The major function of this study area is only the celebration of match-winning. Maximum users are satisfied with the outlook of the overall field, but critical environmental constrains as heavy rain rigidly hampers the accessibility by creating water logging in the field and there is no proper management systems for preventing water storage and transfer.

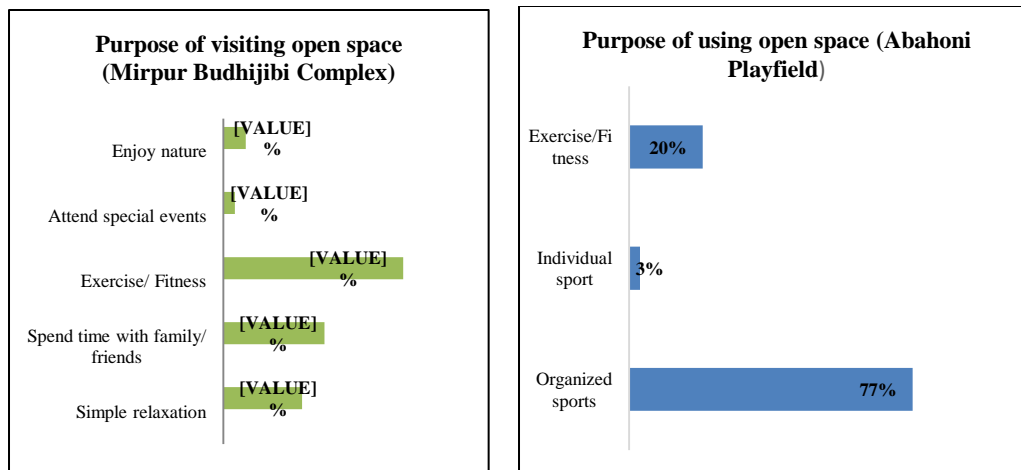


Figure 3 & 4: Purpose of visiting open space

Source: Field Survey, 2017

From the study analysis, it has been revealed that the prime users were male at the open space from nearby communities, female users also share influential portion of the total number which defines the equal accessibility for all age group.

Socio-economic profile analysis of the user group identified the highest users from middle income segment. Highest users are revealed as students in terms of profession. The reason behind using and timing of the open space has been identified as casual. However, joggers usually do morning walk and exercise activities. Frequency of park using is 54% in morning and 46% in afternoon by all user groups.

It is traced in the study that people from nearby communities intend to visit park with a regular 2 or 3 days interval. People within communities can also visit 2 or 3 times within a week since they have more options of open spaces such as- school playground and staff quarters play lot.

The prominent findings of the study assures that distance is the significant element for the determination of accessibility. Analysis revealed that maximum people complete their respective distances for reaching the open space on foot. Non-motorized transport is also the convenient way for community and outside users. A short rickshaw ride is the most favorite way for most of the users for reaching. For disabled group, accessibility conditions have been found as satisfactory. The well-constructed walkways and enlarged ramp complement the usage of disabling groups conveniently. The majority (80%) users have voted positively in the context of gender accessibility as the park is accessible for all gender however a few (20%) have objections regarding transgender.

For being public property, the park has provided the advantage of mass people usage. The majority (97%) has no confusion about unauthorized or illegal occupancy. It remains closed for users only before 1 month of the intellectual day celebration. As

mentioned earlier, the prime inclination for the people is the well-paved and managed walkway, shades as well as the natural beauty of the selected open space.

Prohibiting Factors for using Open Space: Perception of Non-User Group

80% of households, who are non-users right now, shared their experiences of visiting the playground before. Existing non-user group has shared their opinion on stopping the use due to the fear of getting hit by balls and security aspect. The amount of increased transportation cost and club fees for training are also responsible factors for their inaccessibility. The inaccessibility is acute for the middle age group people and for their jogging or lack of sitting arrangements.

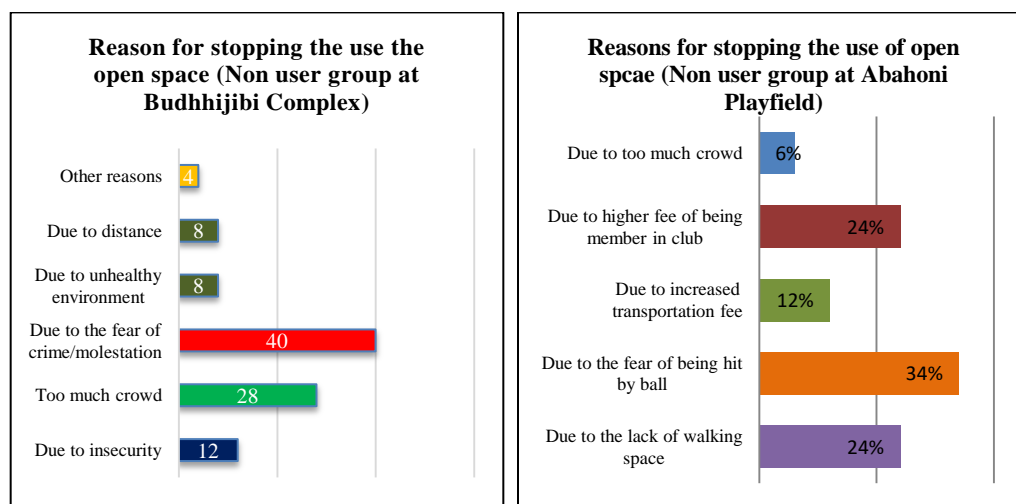


Figure 5 & 6: Prohibiting factors for using open space

Source: Field Survey 2017

The analysis revealed that majority of the non-user households (96%), were regular user of the open space before. They described for not using the open space for several reasons, such as- time shortage, work burden etc.

The field survey analysis has revealed that- due to the fear of crime/molestation, non-users (40%) stopped the use of the open space; 28% had stopped for heavy crowd; 12% on the basis of insecurity; and 8% for long distance and unhealthy environment. Illegal activities were also significant reason for stopping the usage. From field survey, it is depicted that the majority (64%) of the non-users were not interested in using the open space due to social factors, 20% for the reasons of cultural factors, 12% had stopped for the economic factors and 4% had stopped for environmental factors.

Following table is the summary of findings of comparative analysis of the study areas on the basis of prohibiting factors

Table 1: The Summary finding of prohibiting factors

Prohibiting Factors	Abahani Playground	Buddhijibi Shahid Minar
Social Factors	For both user and non-user group, several social factors like safety, quality issues, different age and gender group accessibility is better than any other open spaces.	In spite of having well-furnished infrastructure with natural beauties, accessibility is greatly hampered for the chances of occurring illegal activities, safety issues.
Economic Factors	Amount of transportation fee for user group is increasing day by day which is an alarming prohibiting factor of accessibility for user group in the perception of users.	For having the accessibility for all class people and especially for lower income group, larger portion is satisfied with the transportation cost from distanced communities.
Cultural Factors	Due to private ownership, cultural and religious program arranging scope is very limited in this playground, only limited cultural programs are organized that doesn't hamper accessibility of people	Accessibility is hampered for the purpose of paying tribute to the martyrs as well as several cultural and religious activities.
Environmental Factors	Inconvenient environmental factor as excessive rain prohibits accessibility due to poor management of playground.	Environmental factors never prohibits accessibility of both user and non-user group due to its well-furnished infrastructures.

Source: Developed by authors, 2017

Application of Accessibility Measurement Models

By applying the theories of accessibility measuring models, the following aspects have been summarized:

Table 2: The Summary attribute by using accessibility measuring tool

Name of the Models	Summary of attributes	Findings
Simple Proximity Measures	Minimum travel cost and distance	Accessibility patterns changes with the minimum distance and travel cost. In both study areas, distance is the major factor which prohibits people to use the open spaces regularly; travel cost also prohibits the accessibility of middle income group users to enjoy their recreation.
Gravity Model	Attraction factors of open space, satisfaction level of users	In both study areas, attractive factors are different on the basis of the typology. In Abahoni

Name of the Models	Summary of attributes	Findings
		Playground, the major attractions are mostly service based, neither resource based. On the other hand, in Budhhijibi Shahid Minar complex, prime attraction is greeneries, long paved walkway which is accessible as well by comparatively lower income group. However, due to the concern for safety, accessibility differs.
Utility-Based Model & Activity Based Model	Modes of transportation, income of user group	The relationship between average incomes of user group is one of the most determinant factors of accessibility. NMT distance is acceptable for most of the users but always it is not possible to reach at open spaces through NMT, for high volume of traffic, users can't avail rickshaw always. The average expenditure of transport purpose is a tough call to take for the middle income users.

Source: Developed by authors, 2017

Conclusion

The study findings reveal that accessibility is not only dependent on the concept of place but also on the quality of it. In densely populated urban areas open spaces must be the most vibrant and accessible. But their significance is not remembered always in the debate about landscape architecture and urban design. In Dhaka rapid growth of the urban population has caused the huge encroachment of open space due to increasing demand on land for housing and other urbanization need. But still, there is enough scope, to rectify the flaws with planning and design, and thus enhance the accessibility and use of the open spaces. Public accessibility is diverting day by day due to all types of factors such as social, economic, political, and environmental factors. It's not only creating feelings for a specific group, a user, or a non-user. Nothing is so perfect in the present condition of public accessibility in the capital of Dhaka. Open spaces as parks and playground suffering most from accessibility problems, because people think about recreation after livelihood. But for achieving a healthy nation, open spaces are required for taking a deep breath, for giving a child some fresh air, and at least the chance of playing. This study is an attempt to trace the preventive factors that discourage a person from visiting open space. Users- who are presently using open spaces by covering all the barriers and problems and non-user groups who cannot use due to their problems, prohibiting factors. Both groups have been selected from a 1 km catchment area. Factors that affect the people most with its impacts and create inaccessibility in spite of having open spaces in close proximity are the main issues focused on this study. The ultimate output of the study can be stated in one sentence that, accessibility is not only the thing

that can only be described by proximity or physical distance. It's the choice of the public, which determines the accessibility. So for considering accessibility, public accessibility identification and consideration are a must for planning perspective.

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