



ADDISS ABABA UNIVERSITY
COLLEGE OF TECHNOLOGY AND BUILT ENVIRONMENT
SCHOOL OF BUILT ENVIRONMENT

STUDY OF SPATIAL CHARACTERISTICS AND THEIR UTILIZATION
OF HAMLE 19 AND BIHERE TSI GE PUBLIC PARKS IN ADDIS ABABA

BY

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**Study of Spatial Characteristics and their Utilization of Hamle 19 and
Bihere Tsige Public parks in Addis Ababa**

By:

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**A Thesis Submitted to the School of Graduate Studies of Addis Ababa
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Requirements of Masters of Science Degree in Urban Planning***

Advisor

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June, 2025
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DECLARATION

I, Meron Tadesse, affirm that this thesis under the title “Study of Spatial Characteristics and their Utilization of Hamle 19 and Bihere Tsige Public Park in Addis Ababa” is my original work and has not been presented for a degree in any other university. All sources other than my own idea in this study are acknowledged and properly cited.

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DEDICATION

This work is dedicated to my altruistic sister, Tigist Tirunhe, for always offering a shoulder to lean on.

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LIST OF ACRONYMS

AACPPO	Addis Ababa City Government Plan Revision Project Office
AACPDC	Addis Ababa City Plan and Development Commission
CSA	Central Statistical Agency
DPAR	Department of Parks and Recreation
ECA	Economic Commission of Africa
GI	Green infrastructure
LED	Light-emitting diode
PPS	Project for Public Spaces
SPSS	Statistical Package for the Social Sciences
UGS	Urban Green Space
UOS	Urban open spaces
AACAUBG	Addis Ababa City Administration Urban Beautification and Greenery Bureau

ABSTRACT

This study explores how spatial characteristics influence public park utilization, based on user perception. By examining the users' perception on the spatial characteristics of the park, the study identifies highly related variables which influence the utilization of the park and gives a recommendation for the optimum use of new and existing parks. This study uses mixed method that aims to explain users' perceptions and spatial characteristics of the park through case study methodology. It uses both descriptive and explanatory types of research designs. Hamle 19 and Bihere Tsige public parks are selected as a case study based on different selection criteria. Data were collected from a randomly selected park visitors through questionnaire and interview. The data is analyzed using SPSS (Statistical Package for the Social Sciences). A statistical procedure was used for the study, and the correlation analysis and the significance of the relationships were tested with a 95 percent confidence level. A total of ten dependent and two independent variables are used to measure the correlation. The results indicate a significant relationship between spatial characteristics and urban park utilization. Ten independent variables were shown to significantly correlate with the dependent variables. And only three and five variables are highly related with the city level and Sub city level parks respectively. However none of the variables are negatively correlated. These elements should be purposefully taken into account during the park design and development process in order to maximize park utilization. Lastly, more research ought to be done to improve the park's qualitative features.

Keywords: Public Park, Spatial Characteristics, Utilization, Perception

Chapter One

1. Introduction

Green infrastructure is a network of both natural and human-managed ecosystems, including urban parks, community gardens, green buildings, and green roofs (McPhearson et al., 2016). It offers spaces for recreation, the development of a sense of place, and social cohesiveness and connection. People spend their free time in the city's green infrastructure, which includes public parks. Urban parks offer a variety of formal and informal, passive and active leisure, sport, recreational activities, and play (Taylor & Coalter, 2001). According to Woolley and Rose (n.d) these spaces have a greater impact on a community's mental and physical health.

During colonial and post-colonial periods, the continent develops numerous public parks and recreational facilities. East African nations embraced numerous plans that made use of Garden City ideas and other theories during Africa's pre-independence era (Austin, 2010). The majority of Ethiopia's parks were built in the 1970s in Addis Ababa, the country's capital. They are neglected and do not serve as the interest of visitors today (Kassaye, 2017).

Numerous city recreational public parks are dealing with various issues related to management and usage. The parks are being converted to serve different purposes. Approximately 4693.2 ha (9.2 percent) of UGI's land use had been reduced or converted to other land uses between 2003 and 2016, and the existing parks were underutilized for a variety of reasons (Azagew & Worku, 2020). Behavioral issues like lack of time and lifestyle, social issues like crime, lack of amenities, unsuitable location, lack of accessibility, lack of attractiveness, and a weak institutional setup are the main causes of this type of problem (Das & Honiball, 2016; Alemaw, 2017).

Perceptions of green spaces by users can be investigated by looking at how they are valued, including whether they are preferred over other areas (De La Barrera et al., 2016). Parks have the potential to be a beneficial community resource and promote healthy lifestyle choices, but when they are neglected, exhibit signs of disorder, or are unsightly, people may worry about their safety, which could affect their use (Roberts, 2019).

According to Addis Ababa City Administration Urban Beautification and Greenery Bureau (2022) there are 25 public parks. Those are Akaki Park, Ambassador Park, Anbessa Gibi Park, Bihere Tsige Park, Debab Park, ECA Park, Ethio-Cuba Memorial Park, Ethio-Korea Park, Entoto

Park, Ferensay Park, Friendship Park, Gedame-Eyesus Park, Gola Park, Hamle 19 Park, Holland Embassy Park, Jemo Betwoded Woldetsadik Goshu Park, Kaleb Park, Kolfe Park, Lideta Park, Nation, Nationalities and Peoples Park, Peacock Park, Sheger Park, Teklehaimanot Park, Unity Park and Yeka Park. And there are five parks which are privately owned those are Africa Park, Future Park, Tropical Garden, Mulugeta Park, and Shalla Park. According to Kassaye (2017) the majority of the city's public parks were primarily utilized for community events like weddings and graduations. Furthermore, the locals use them as places to meet, read, and relaxation.

Therefore, Analyzing the reason behind underutilization of the existing parks related to the spatial characteristics of the public parks and users perception will solve the problem of changing land uses from urban Green Infrastructure to others and underutilization of the existing public parks (Yeshitela, 2020). It will play a major role in maximizing the utilization of the parks by building a positive perception towards the park through analyzing users' needs and giving spatial solutions towards their main concern.

1.1 Background of the study

Green areas and parks are labeled as a lung of a city which reflects the high significance of parks for the city and its inhabitants (Jones, 2018). It is also becoming as a one indicator of urban life quality that indicate parks spaces for breathing in polluted cities (Xing & Brimblecombe, 2019). Currently, provision of Green space, Open area and Public park in urban area is necessary, to create a healthy community and livable environment (Chan & Shing et al., 2018). Areas with less access of green area are the least chosen from areas with standardized green infrastructures (Wu et al., 2015).

According to Nady (2016) urban parks are regarded as public areas which are crucial for improving the standard of living in cities. They offer important ecosystem services that benefit metropolitan areas in terms of the environment, aesthetics, recreation, physiology, and economy. Facility and its feature, space, history, wildlife, culture and quietness influence how accessible and appealing an urban green space can be (VanHerzele & Wiedemann, 2003).

The distribution and accessibility of public recreational parks are examined by Seifu & Stellmacher (2020), who highlights sub cities with a better access to public parks. The study shows that inner cities in Addis Ababa are densely populated as compared to peripheral sub cities. However there

is a wide variation in the accessibility of existing parks. Inner cities have relatively few parks and believed that the proposed plan by the Addis Ababa city council has the capacity to reduce this gap if the newly established parks are located for sub cities which are park-deficient (AACPO, 2017). This indicates that the spatial distributions of parks in the city are not located based on the standard and service area coverage.

Decreasing area coverage of green spaces, public parks and other urban green infrastructures is a critical problem in the world as the population grows rapidly. According to Fetene & Worku (2013), Addis Ababa's urban forest and other green features are distracted. Based on this issue, Gebremeskel (2014) has done a research on area coverage change of green spaces. It had been demonstrated using remotely sensed satellite images. Gebremeskel's research proves that there is a tremendous decreasing area of green spaces. Change detection analysis using remote sensing in Addis Ababa had yielded that, a total of 1,621ha of green spaces had already been destroyed mainly caused by urbanization, informal settlement and deforestation (Gebremeskel, 2014).

After the Sustainable Development Goals (SDG) of the United Nations (UN) established a goal to offer access to inclusive, accessible public spaces and green spaces (UN, 2015). Green infrastructure accessibility study is conducted utilizing gridded population data, road networks, and land use maps based on nearby and per capital green indicators (Seifu & Stellmacher, 2020). Similarly, it is claimed that factors related to visual accessibility, such as sight distance, park visibility, and illumination level within and surrounding the parks, influence how often people use public parks (Das & Honiball, 2016). According to the study by Seifu & Stellmacher (2020), while the accessibility and distribution of UGSs are problematic in developed nations, the challenges are more severe in rapidly expanding cities such as Addis Ababa, Ethiopia.

Samson (2014) tried to identify the use, state and challenges for the low level of development of green infrastructure and also investigated the level of awareness of the residents towards the functions of green infrastructure in Addis Ababa. Finally concluded that there is relatively little public knowledge of the need of creating, maintaining, and utilizing recreational parks for their intended purposes. Also, because of a lack of community involvement and difficulties integrating many stakeholders, recreational parks are dealing with unauthorized construction, changes in land use, wasteful resource usage, and for storage and construction material selling (Nordh & Østby, 2013).

The utilization of urban parks is significantly influenced by people's perception. Erkip (1997) observes that people who utilize recreational parks experience negative perceptions about the park and its amenities, which deters them from visiting and utilizing the park when they feel unsafe or that their personal space is in danger. Because of this, these parks are linked to negative emotions which creates barriers. Furthermore, one of the main reasons urban dwellers did not visit and make use of public recreational parks was physical distance (Erdogan, 2005). The reason for underutilization of the public parks are attributed to many factors that include lack of amenities, inappropriate location, lack of attractiveness, lack of accessibility, behavioral issues like lack of time and life style, social issues like crime to name a few (Das and Honiball, 2016).

Previously, researches have been undertaken about public park issues like Challenge and Opportunities of Public parks (Azagaw & Worku 2020; Almaw, 2017), Spatial equity and Accessibility of Parks (Hussein et.al.,2018), Perception, Attitude and Satisfaction of Residents towards existing Public parks (Yeshitela, 2020) Quality and Management about Parks (Chen et al., 2019) and Utilization of Public parks (Endale et al., 2019). This researches has indicated that rapid urbanization, less community participation, shortage of facilities, low quality of public parks, accessibility problems, security issues are considered as the cause for inadequate public parks use (Endale et al., 2019; Hussein et al., 2018; Yeshitela, 2020).

Beside the regeneration of existing public parks, assessing users' perception and characteristics of Public Park is mandatory to figure out the reason behind underutilization of the parks (Yeshitela, 2020; Papargyropoulou, 2006). In this study the author will focus on the internal and surrounding spatial characteristics that influence the utilization of Hamle 19 and Bihere Tsigie public parks. And finally forwards appropriate spatial characteristics that will contribute to the optimum utilization of the parks and forward recommendations that can encourage its utilization.

1.2 Statement of the problem

Addressing the different urban stresses brought on by people's separation from nature, particularly from green areas, is often seen as a multidimensional problem that is closely tied to many aspects of urban design, particularly public green parks (Mushkani & Ono, 2021). In the case of Addis Ababa city, area coverage of greenery is becoming less and less in the past decades. Rapid population growth has resulted in increased built space density, housing expansion, infrastructure construction, and industrial sector reconfiguration along the city's periphery. Forest, agricultural land, public parks, playgrounds are becoming rare to see in urban areas.

Public parks have been provided by the government and private developers. Hamle 19 and Bihere Tsige public parks were established 80 years ago for the community purposes. Currently, these parks are pioneer and have larger area compared to other park. But it doesn't function well as it supposes to be because it lacks major park components (Kaczynski & Henderson, 2007). Existing Public parks were supposed be a better service provider but these parks are only active during weekends, wedding seasons and holiday times. On other days it is barely utilized. Other than this the parks are mostly used for non-green purposes such as parking lots (Seifu & Stellmacher, 2020)

In the last three years the city has been developing new public parks in the inner and periphery of the city. Compared to the previous time, people tend to visit and mesmerize public parks more than the previous decade (Guadie & Getahun et al., 2022). A considerable visit to public parks has been seen in the newly built parks in Addis Ababa city. This raises an important question: Why are existing parks not being used as effectively as the new ones, and what factors contribute to their decline in usage? Additionally, ensuring that new parks do not face the same fate of abandonment in the future requires a proactive approach. This problem calls for a deeper analysis of the internal and surrounding spatial characteristics of the existing public parks based on users' perception is vital to create long-lasting, well-utilized green spaces for future generations.

Effective use of green spaces ensures sustainable cities; inappropriate use of green spaces lead to degradation of resources (Samson, 2014). By assessing the spatial characteristics and the utilization of Public parks based on users' perception, the author will recommend the appropriate planning solutions. This foster higher utilization of parks by identify spatial characteristics with higher influence.

1.3 Objective of Study

1.3.1 General Objective

The general objective of this research is to examine the internal and surrounding spatial characteristics of Hamle 19 and Bihere Tsige public parks and its influence on utilization based on users' perception.

1.3.2 Specific Objectives

- To examine the existing internal spatial characteristics of Hamle 19 and Bihere Tsige public parks based on users perception
- To investigate the surrounding area spatial characteristics of Hamle 19 and Bihere Tsige Public parks based on users perception
- To explore the relationship between users' perceptions of the internal and surrounding spatial characteristics and their utilization of Hamle 19 and Bihere Tsige public parks.
- To recommend possible planning solutions on spatial characteristics of public park that influence their utilization

1.4 Research Questions

To give a solution for the above mentioned problems and to achieve the main goal of the study, the research answered the following questions.

1. What are the users' perception of the internal spatial characteristics of Hamle 19 and Bihere Tsige public parks?
2. What are the users' perception on the surrounding area spatial characteristics of Hamle 19 and Bihere Tsige public parks?
3. How does the internal and the surrounding area spatial characteristics contribute to the utilization of Hamle 19 and Bihere Tsige public parks?
4. What are the optimum spatial characteristics of public parks for better utilization?

1.5 Scope of the study

1.5.1 Spatial scope

The spatial scope of the study is extended to two parks which are city and sub city Level Park. Namely Bihere Tsige and Hamle19 public park with an area coverage of 14.2 Ha and 6.7Ha respectively. The study area is limited to Nifas Silk, Woreda10 and Woreda12 for the city level

park, Bihere Tsige public park and Gulele sub city, Woreda 2 for the sub city level park, Hamle 19 public park.

1.5.2 Thematic Scope

Examining the perception of park users towards park spatial characteristics is important to forward effective means of upgrading the spatial qualities of a park. Thus the focus of the study is limited to the internal spatial characteristics and the surrounding spatial characteristics, based on users' perception of the park.

1.6 Significance of the study

The initial benefit of this research is to recommend possible planning solutions on spatial characteristics of Public Park by describing effective spatial characteristics of a park. It will forward users' perception on the spatial characteristics of the park, which creates an active and functional environment where they feel free and welcome to use. The research can be a guideline for designing, locating as well as planning of public parks for the upcoming development. The study will also list out the major perception of the community towards the park, so it can be an input for a better quality public park provision.

Moreover, the study will be helpful for researchers as a stepping stone to do further research on the issue at hand using different tools and techniques. Finally, the study will be an important source of information for urban planners, policy makers, NGO practitioners and academics working on public park development.

1.7 Limitation of the Study

Since the study relies on subjective responses, personal biases or mood during the visit could influence how participants perceive spatial characteristics such as safety, cleanliness, and attractiveness.

1.8 Organization of the thesis

The thesis is organized into five chapters. Chapter one introduces the research by outlining the research problem, objectives, and questions, defining the study's scope, and highlighting its significance. Chapter two presents a literature review, discussing relevant theories and previous research to identify knowledge gaps and providing a theoretical framework on spatial characteristics of public parks and factors influencing park utilization, identifying the main

variables under investigation. Chapter three details the methodology, describing the research design, data collection methods, sampling, and analysis techniques employed to address the research questions. Chapter four presents the results and discusses the findings in comparison to existing literature and theoretical perspectives. Finally, chapter five offers conclusions and recommendations, summarizing key findings in response to the research questions and providing recommendations for practice and future research directions.

Chapter Two

2. Literature Review

2.1 Definition of Urban Green Infrastructures

Green infrastructure is a concept that has been defined in various ways by different authors. For instance, Benedict and McMahon (2002) described it as a network of interconnected natural areas, such as waterways, wetlands, woodlands, wildlife habitats, greenways, parks, conservation lands, and working farms, ranches, and forests. Alternatively, Green infrastructure can also be understood as the network of natural environmental features within urban areas, offering a range of social, economic, and environmental benefits. According to Samson (2014), green infrastructure includes key physical elements such as urban forests, parks, rivers, street trees, and urban agriculture.

2.1.1 Urban Open Spaces (UOS)

Urban open spaces are frequently described as the "lungs of the city" because of their vital role in improving air quality (Xing & Brimblecombe, 2020). Just as the lungs filter out harmful substances from the air we breathe, these spaces especially those rich in vegetation absorb pollutants and release oxygen, contributing to healthier urban environments.

Beyond their function as air purifiers, these natural areas also mitigate the urban heat island effect, which exacerbates air pollution by increasing temperatures in cities. By providing shade and cooling through evapotranspiration, urban open spaces help lower surrounding temperatures, reducing the formation of smog and improving overall air quality. Additionally, these green spaces promote biodiversity and offer residents areas for recreation, mental relaxation, and social interaction, all of which contribute to a higher quality of urban life.

In this way, urban open spaces are not just aesthetic or recreational assets; they are integral components of a city's environmental health. By conserving and expanding these spaces, cities can address air pollution, mitigate climate change, and improve the well-being of their inhabitants (Nicol & Blake, 2000).

2.1.2 Urban Green Space (UGS)

Urban Green Space (UGS) refers to areas within cities that are partly or entirely covered with vegetation, such as grass, trees, shrubs, and other plant life. This includes parks, community gardens, cemeteries, as well as rooftop and vertical gardens, meadows, and forests. UGS also

encompasses urban water bodies such as ditches, canals, rivers, and riverbanks often referred to as "blue-green zones" (Haase et al., 2014).

In broader terms, UGS represents the natural environments in urban areas that connect people to nature, including parks, forests, grasslands, wetlands, and river corridors (Chiesura, 2004; Dai, 2011; Wolch, Byrne, & Newell, 2014). Recently, UGS has become a key indicator of urban life quality. The distribution and accessibility of these spaces are seen as essential for supporting both ecological and social functions, as well as promoting environmental justice (Barbosa et al., 2007; Wendel et al., 2012; Wolch et al., 2014).

The concept of urban green infrastructure, which has gained popularity in recent years, is closely related. It is described as the network of natural, semi-natural, and artificial ecological systems in an urban areas that function at various spatial scales (Tzoulas et al., 2007).

2.1.3 Public Park

Public parks play a crucial role in maintaining the urban environment, acting as natural buffers that enhance the quality of life for city residents. These parks provide not only aesthetic enjoyment but also essential recreational services, which are particularly valued by urban dwellers (Gulzar et al., 2010). As key components of urban green space, parks are among the most important areas for residents, offering spaces for relaxation, social interaction, and recreation. Typically, urban public parks refer to open green spaces that include amenities such as playgrounds and seating areas (Kholý et al., 2002).

Urban parks can be categorized into two main types based on their function and theme: theme parks and living-zone parks. Living-zone parks, such as small parks, children's parks, and neighborhood parks, are designed and managed with the specific needs of urban communities in mind. These parks serve as vital green spaces within residential areas. In contrast, theme parks, which include historical parks, cultural parks, waterside parks, cemeteries, and sports parks, are developed for specialized purposes. While they serve distinct functions, they also contribute to the overall park network and fulfill some of the roles of living-zone parks (Jaehyeong & Kim, 2014).

2.2 Preference and Perception

Preference refers to the act of choosing one area or landscape over another. According to Kaplan and Kaplan (1989), the effectiveness of a setting or environment plays a significant role in shaping individual preferences. As they suggest, preference is linked to environments where organisms, including humans, can thrive and respond to their surroundings. Like other species, humans are more likely to favor environments in which they can function effectively (Farahani & Maller, 2018).

Perception, on the other hand, encompasses both sensory experiences often visual of green spaces and the meanings or values residents attribute to them (Swanwick, 2009). Residents' perceptions of green spaces can be explored by assessing whether these areas are preferred over others (De La Barrera et al., 2016). As Jay & Schraml (2009) note, perception is the subjective interpretation of reality, formed through an individual's interaction with their environment. Thus, it is not only the physical characteristics of a setting that influence perceptions, but also the values, experiences, and socio-cultural contexts of the individuals using the space (Scott, 2003). Consequently, examining how individuals perceive a setting is a complex, multifaceted process.

Both preferences and perceptions of green spaces are influenced by individual characteristics, as well as the inherent qualities of the spaces themselves. Gao et al. (2019) emphasize that perception studies can help assess how well a green space functions and identify areas for improvement. For example, residents' perceptions of safety and accessibility can directly influence their level of engagement with a park. Improving these aspects can enhance park visitation and foster greater community interaction (Farahani & Maller, 2018).

2.3 Values of Public Park

Green infrastructure (GI) represents a multi-scale network of ecological elements that deliver a wide range of functions and benefits to both people and ecosystems (Benedict and McMahon, 2001). As an essential component for sustainable community growth, GI also serves as a critical public investment that contributes to the well-being of both the environment and the economy (Benedict and McMahon, 2012).

Urban green spaces (UGS) offer numerous ecosystem services that benefit humans, including air purification, climate regulation, and improvements to both mental and physical health. These

spaces also foster social interaction and community integration (Escobedo & Nowak, 2009; Laforteza et al., 2009; Maas et al., 2009). In addition, UGS play a vital role in mitigating urban flooding, cooling cities during hot summer months, and promoting biodiversity (Haase et al., 2014).

Urban parks, particularly those with tree vegetation, are crucial in stabilizing the urban climate. These parks act as the "lungs" of cities, helping to counteract pollution by filtering particulates from the air, releasing oxygen, and absorbing carbon dioxide. As essential landscape elements, urban public parks provide a wide array of environmental and social benefits, making them an integral part of urban life. Parks are seen as inclusive urban services that bring together individuals from diverse socioeconomic backgrounds, fostering a sense of community and vitality (Konijnendijk et al., 2013).

2.3.1 Social Benefits

Urban green spaces (UGS) significantly enhance social engagement, foster community cohesion, and strengthen local attachment, especially in underserved communities (Bell et al., 2008). Parks are essential in promoting social value by encouraging interactions among people, which in turn cultivates trust, mutual examining, shared values, and supportive behavior. These social benefits arise when people come together with common interests and goals (Konijnendijk et al., 2013).

Taylor and Coalter highlight that urban parks contribute to the formation of local identity, providing accessible, flexible, and inclusive spaces for a diverse range of users. Such parks offer continuity and a sense of place in rapidly evolving urban environments. They serve as critical social spaces that can help build social capital by fostering relationships and community involvement. Furthermore, Tonnelat (2010) notes that parks, often seen as spaces for recreation, are also vital socializing areas. When well-managed, they can provide a welcoming environment for vulnerable groups, such as children or individuals with disabilities, encouraging social participation and community life. Parks, through their role in building community cohesion, also provide opportunities for voluntary and community-based activities that can directly benefit society's less fortunate members.

2.3.2 Economic Benefits

Urban parks also offer substantial economic advantages by increasing property values, enhancing the visual appeal of urban landscapes, and boosting local business confidence (Rehan, 2012). Research by Dunse, White, and Dehring suggests that urban parks and open spaces are valuable resources, improving the quality of life while providing significant environmental functions that make surrounding areas more attractive. High-quality green spaces help create a positive image of a city, drawing in tourists, skilled labor, and investment. This, in turn, can boost retail sales and positively influence both commercial and residential property values. As a result, UGS contribute to the competitiveness and economic development of urban areas (Arvanitis, 2008). Public parks are crucial for the social and economic well-being of urban communities, promoting physical health while serving as vibrant hubs for social interaction and recreation (Saelens & Kraft, 2004).

2.3.3 Environmental and Ecological Benefits

Urban parks play a key role in protecting natural resources, offering environmental benefits such as air and water purification, wind filtration, and microclimate regulation (Chiesura, 2004). They can sequester carbon dioxide, reduce noise pollution, protect soil and water, and promote biodiversity (Loures & Santos, 2007).

Barber (2008) emphasizes that parks do more than serve as recreational spaces; they also perform critical ecosystem functions, such as slowing floodwaters and regulating urban temperatures. Parks with tree vegetation are especially important in stabilizing the urban climate.. In this way, parks contribute to creating ecologically sensitive urban areas by providing wildlife corridors and habitats for birds, animals, and plant species (Xing & Brimblecombe, 2020).

2.3.4 Health Benefits

Public parks offer various spaces for physical activity, such as workout areas, playgrounds, and leisure zones, encouraging people to stay active and reduce the risk of diseases like diabetes. Green spaces in urban settings provide opportunities for exercise and recreation, which significantly contribute to both physical and mental health (Arvanditis, 2008).

A study by Penn State University revealed a strong correlation between park visits and improved health, including reduced stress, lower blood pressure, and better physical health. Parks and public lands are also known to improve water quality, protect groundwater, prevent flooding, enhance air quality, and offer recreational spaces for families to connect with nature (www.nrpa.org).

2.3.5 Recreational and Leisure Benefits

Urban parks, with their diverse facilities and natural environments, provide great value for leisure and recreational activities. They serve as essential spaces for relaxation and recreation, offering a retreat from the psychological stress of modern life (Hailegiorgis, 2017). Parks offer a wide range of activities, from walking and exercise to play and organized events, catering to both formal and informal, active and passive forms of leisure.

2.4 Spatial and Physical Characteristics of Public parks

The use and popularity of urban parks are influenced by both external and internal factors. External factors, such as the park's location, accessibility, proximity to major roads, population density, and surrounding land use, play a significant role in determining park visitation. Negative influences on park use may include the presence of roads, water areas, high ticket prices, or elevated property prices. Internal factors, on the other hand, include the diversity of amenities, infrastructure, and spatial layout within the park, all of which contribute to its overall appeal (Chen, 2021).

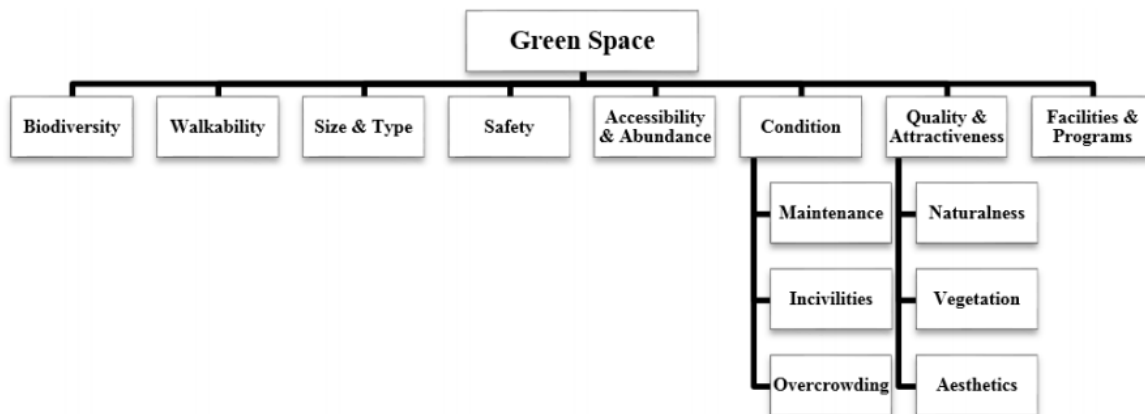


Figure 2.1: Spatial and Physical Characteristics of Public parks

2.4.1 Accessibility

Accessibility is a key factor in park utilization, encompassing both the ease of reaching the park and the ease of moving around within it (Bahriny, 2020). According to the Project for Public Spaces (PPS), park accessibility can be evaluated based on factors such as proximity, continuity, walkability, vehicle and pedestrian access. Other important aspects of accessibility include the park's visibility from surrounding areas, interior usability, functionality for people with special needs and access to transportation hubs near the park. The availability of various movement

options, such as pedestrian, bicycle, and vehicle access, also influences the park's accessibility (John, 2023).

2.4.2 Location and Area

In urban planning, ensuring accessible and well-distributed green spaces is essential for community well-being. According to urban planning standards of Addis Ababa (2017), Woreda Parks (≈ 3 ha) should be located within 1,000–1,500 meters of residential areas, serving up to 40,000 people, while Sub-city Parks (≈ 8 ha) should be within 4,000 meters, accommodating up to 160,000 people. These parks must be strategically placed along appropriate road networks, ensuring safe and efficient public transport access. Additionally, all parks should be designed with inclusive pedestrian pathways, providing equal access for all individuals, regardless of age, socio-economic status, or physical ability. To further enhance accessibility, at least 30% of the total park area should be designed to accommodate people with disabilities, eliminating barriers such as steps and steep ramps. This framework promotes equitable access to urban green spaces, fostering social inclusion and environmental sustainability (AACPDC, 2023).

2.4.3 Management and Maintenance

The management and maintenance of urban parks encompass the overall administration of the park as well as the upkeep of surfaces, vegetation, litter control, and more. Effective participation in park development and maintenance is often linked to the public's positive perception and attitude towards these spaces (Yeshitela, 2020). A park's popularity and rating are frequently influenced by its management quality. For instance, research by Gui (2016) suggests that residents in Shanghai prioritize factors such as the quantity and quality of recreational facilities, the level of maintenance, environmental quality, and the functional complexity of park spaces.

2.4.4 Permeability and Movement

Permeability refers to the ease with which individuals can move through a park, utilizing paths or open spaces. It also relates to visual permeability, which allows people to see into and out of the area (Bahriny, 2020). A well-designed park should provide ample space for free movement while ensuring that people can visually engage with the surrounding environment (Maksoud et.al. 2012).

2.4.5 Safety and Security

The perception of safety is a crucial factor influencing park usage (Gwedla, 2019). For example, studies in Guangzhou, China, identified issues like vandalism and public disorder as barriers to

park visitation (Jim, 2013). To enhance security, the strategic placement of amenities such as seating, food kiosks, and transparent fencing along key corridors can encourage park use while providing passive surveillance (DPAR, 2014).

2.4.6 Size and Shape of Green Spaces

The size and shape of urban green spaces play a significant role in their effectiveness. Larger spaces generally offer greater ecological diversity and more extensive ecosystem services (De La Barrera et al., 2016). Van Herzele (2003) research highlights that the size and configuration of parks are important when considering public preferences and usage, with larger, more diverse green spaces attracting more visitors.

2.4.7 Proximity

Proximity, or the distance to the nearest park, is a key determinant of park usage. Studies have shown that people are more likely to visit parks that are within a short walking distance from their homes (Van Herzele, 2003). For neighborhood parks, a maximum walking distance of 400 meters (approximately five minutes) is considered ideal for accessibility (Holm, 1998). Additionally, the design and purpose of the park can influence how far people are willing to walk, with larger parks offering a wider variety of activities that may draw visitors from greater distances.

2.5 Park Qualities

The success of a park depends on various factors, such as the functionality of its facilities, the quality of outdoor furniture, and the presence of public art. Negative aspects like graffiti, poor maintenance, and littering can significantly detract from the park's appeal and reduce visitation rates (McCormack et al., 2010). On the other hand, parks that offer attractive and well-maintained environments are more likely to encourage physical activity and social engagement (Giles-Corti et al., 2005). The quality of park facilities, such as playgrounds, sports fields, and seating areas, also contributes to its usability and overall satisfaction (Hughey, 2016).

2.5.1 Space

A sense of spaciousness is one of the most valued attributes in a park. It allows individuals to feel free and unconfined, particularly in large parks with mature tree stands that create an immersive experience away from the urban environment (Grahn, 1991). Fragmentation, such as dividing the park into smaller, isolated sections, can disrupt this sense of space. Additionally, the presence of

large buildings or other urban structures may disturb the perception of openness (Grahn et al., 1995).

2.5.2 Nature

Contact with nature is a fundamental quality that draws people to urban green spaces. Natural environments foster a sense of connection with the world around us, and many people seek parks that offer a variety of plant and animal species (Axelsson Lindgren et al., 1990). Research shows that visitors to larger, less frequently visited parks often appreciate the diversity of natural elements and the sense of detachment from the city (Grahn & Berggren-Bärring, 1995).

2.5.3 Culture and History

Cultural and historical elements contribute to the appeal of parks, enhancing the sense of continuity and connection with the past (De Groot et al., 2003). Social and cultural activities, such as exploring historic buildings or attending local exhibitions, are especially encouraged in smaller, well-maintained parks where people can engage with their surroundings and interact with others (Grahn & Berggren-Bärring, 1995).

2.5.4 Facilities

The presence of appropriate facilities can greatly enhance the park experience. Key amenities, such as footpaths, benches, play areas, and restrooms, are essential for supporting various activities and ensuring accessibility. Features that encourage longer stays, like picnic areas and sports facilities, play a particularly important role in making parks more enjoyable and functional (Van Herzele, 2003). Improving both the internal and external qualities of parks, such as adding water features or enhancing transportation access, can significantly increase park visitation and overall satisfaction (Chen, 2021).

2.6 Factors influencing Urban Open Space Utilization

Urban open spaces influence residents' daily lives in various ways, shaping both social interaction and individual well-being (Nikšič & Watson, 2018). Key factors that influence utilization include the availability of uninterrupted walkways, clear distinctions between communal and private areas, and the physical comfort of the space. Additionally, activities such as jogging, dining, or socializing are encouraged by vibrant and culturally engaging environments.

Urban open spaces should be equipped with street furniture that ensures both comfort and functionality. This includes elements like statues, benches, playground equipment, water fountains, and public toilets. These features contribute to the long-term usability and attractiveness of the park (Şatir & Korkmaz, 2005).

2.7 Determining Impact Factors

Several factors contribute to the success or underutilization of urban parks. These can be divided into supply factors, demand factors, spatial links, and population density.

2.7.1 Supply Factors

The supply factors include elements such as natural features (e.g., water bodies and vegetation), recreational facilities (e.g., footpaths, sports areas, picnic zones), and overall park infrastructure. Parks that are closer to city centers typically attract more visitors due to their proximity. Other elements like entrance fees, water availability, and park maintenance can also influence park usage (Voigt et al., 2024).

2.7.2 Demand Factors

Socio-demographic factors play a significant role in determining demand for park services. People living closer to parks are more likely to visit them, and the density of the surrounding population can also influence park utilization (Mowen et al., 2007)

2.7.3 Spatial Links

Effective spatial planning, including access to transportation and the variety of land uses in the surrounding area, can enhance park utilization. Areas with mixed land use, such as those containing residential, commercial, and public spaces, tend to encourage higher park visitation. Additionally, well-connected transportation systems help increase accessibility, making it easier for people to visit parks (Wu et al., 2015)

2.7.4 Population Density

Higher population density is positively correlated with increased park usage. Parks located in densely populated areas often see more frequent visits, as residents value the availability of green spaces in urban environments. The convenience of nearby parks also encourages higher participation in recreational activities, enhancing the overall vitality of the park (Nordh & Østby, 2013).

2.8 Underutilization of Public parks

Underutilization of parks is often the result of various factors, including poor location, lack of amenities, inadequate accessibility, and social concerns such as crime. According to the Project for Public Spaces (PPS), key determinants of successful park utilization include accessibility, engagement, image, comfort, and sociability. Factors like road communication, parking, and public transportation are essential to improving park accessibility (John, 2023). Additionally, visual accessibility and the availability of various movement options, such as pedestrian paths and transportation nodes near parks, can significantly enhance park usage.

Though larger parks tend to attract more visitors, the size of the park alone does not guarantee higher utilization. The effectiveness of a park in drawing users is often more related to the quality of its amenities and its accessibility, rather than its size alone (Chen, 2021).

John, (2023) states that features including continuity, closeness, connection, legibility, walkability, convenience, as well as infrastructure for automobile and pedestrian access and visual accessibility standards, are used to gauge how accessible parks are. Therefore, it is essential to assess the spatial characteristics that influence public parks and recreational facilities' accessibility in a city's residential neighborhoods before developing planning and design guidelines to increase accessibility and make the parks and recreational spaces more lively and well-utilized. Significant improvements in the use of parks in the residential area will be made possible by the quantity of access streets to the parks, the proportionate paving facilities on the roads leading to the parks, and the noticeable illumination.

2.9 Urban Green Infrastructure Elements Standards

Components and Facilities of Recreational Parks

Table 2.1: Categories of public recreational parks

No.	Park Category	Park size	Service area coverage
1	Neighborhood Park	<0.3ha	300m (0.3km)
2	Woreda Park	0.3-1ha	1.5km radius
3	Sub city Park	1-10ha	5km radius
4	City Park	>10ha	10km radius

Adapted from (AACC, 2017)

2.10 Green Infrastructures in Addis Ababa

2.10.1 Availability and Accessibility of Green Spaces in Addis Ababa

At present there are 25 recreational parks, ranging in size from 0.4ha to 1300ha, providing recreational and social service to the city's residents.

Table 2.2: List of public parks in Addis Ababa

No.	Park name	Sub-city	Park category	Area (ha)
1	Akaki Park	Akaki	Sub-city Park	6.2
2	Ambassador Park	Arada	Sub-city Park	0.9
3	Anbessa Gibi Park	Gulele	Sub-city Park	1.2
4	Bihere Tsige Park	Nifas Silk	City Park	14.2
5	Debab Park	Gulele	Woreda Park	0.8
6	ECA Park	Kirkos	Sub-city Park	16.7
7	Ethio-Cuba memorial park	Lideta	Woreda Park	2.9
8	Ethio-Korea Park	Gulele	Sub-city Park	3
9	Entoto Park	Gulele	City Park	1300
10	Ferensay park	Yeka	Sub-city Park	5.4
11	Friendship Park	Arada	City Park	46.42
12	Gedame-Eyesus Park	Addis Ketema	Woreda Park	0.4
13	Gola park	Lideta	Woreda Park	0.9
14	Hamle 19 Park	Gulele	Sub-city Park	6.7
15	Holland Embassy park	Kolfe	Sub-city Park	6.8
16	Jemo Betwoded Woldetsadik Goshu park	Nifas Silk	Sub-city Park	8.2

17	Kaleb park	Yeka	Woreda Park	0.5
18	Kolfe park	Kolfe	Woreda Park	2
19	Lideta park	Lideta	Woreda Park	1.2
20	Nation, Nationalities and Peoples Park	Nefas Silk	Sub-city Park	3
21	Peacock Park	Bole	Sub-city Park	3.8
22	Sheger Park	Gulele	Sub-city Park	7
23	Teklehaimanot Park	Lideta	Woreda Park	0.4
24	Unity Park	Arada	City Park	20
25	Yeka park	Yeka	Sub-city Park	2.2

Based on the reference from AACAUBG (2022).

Chapter Three

3. Methodology

3.1 Description of the study area

This study is conducted in Addis Ababa, the capital city of Ethiopia. Addis Ababa has changed its administrative area in the newly established structural plan of the city in 2023. Due to lack of information based on the new structure, the research bases on previous data and structure of the city, with an area of 527 km². In 2023, 4.02 million inhabitants were estimated to live in Addis Ababa based on Central Statistics Agency forecast (2013) with a population density of 7632 people per km².

Based on the statistics from Addis Ababa planning project office in 2017, the total area of urban park in Addis Ababa was 113.7 ha, with a per capita green space area of less than 1m²/person which is a way less than a minimum requirement of 9 m² of green space per individual (WHO,2012). Previously in Addis Ababa there were 10 sub cities: Bole, Yeka, Akaki Kaliti, Kolfefe Keranio, Nifas Silk, Kirkos, Arada, Addis Ketema, Lideta, and Gulele Subcity. The study areas are located in two sub cities namely Gulele and Nifas Silk Lafto Sub city. It is projected that there will be a total population of 394,375 in 30.18 km² coverage of land in Gulele sub city and in Nifas silk, there will be an estimated population of 466,184 in 68.30 km² coverage of land (city population, 2024). This showed that there is a total population density of 12,768 and 6,669 population per square km in Gulele and Nifas silk sub city respectively.

Bihere Tsige and Hamle 19 Public Park has been selected from Nifas Silk lafto and Gulele sub city respectively based on different selection criteria. The area coverage of Bihere Tsige and Hamle 19 Public park is 14.2km² and 6.7km² respectively (AACAUFG,2022).

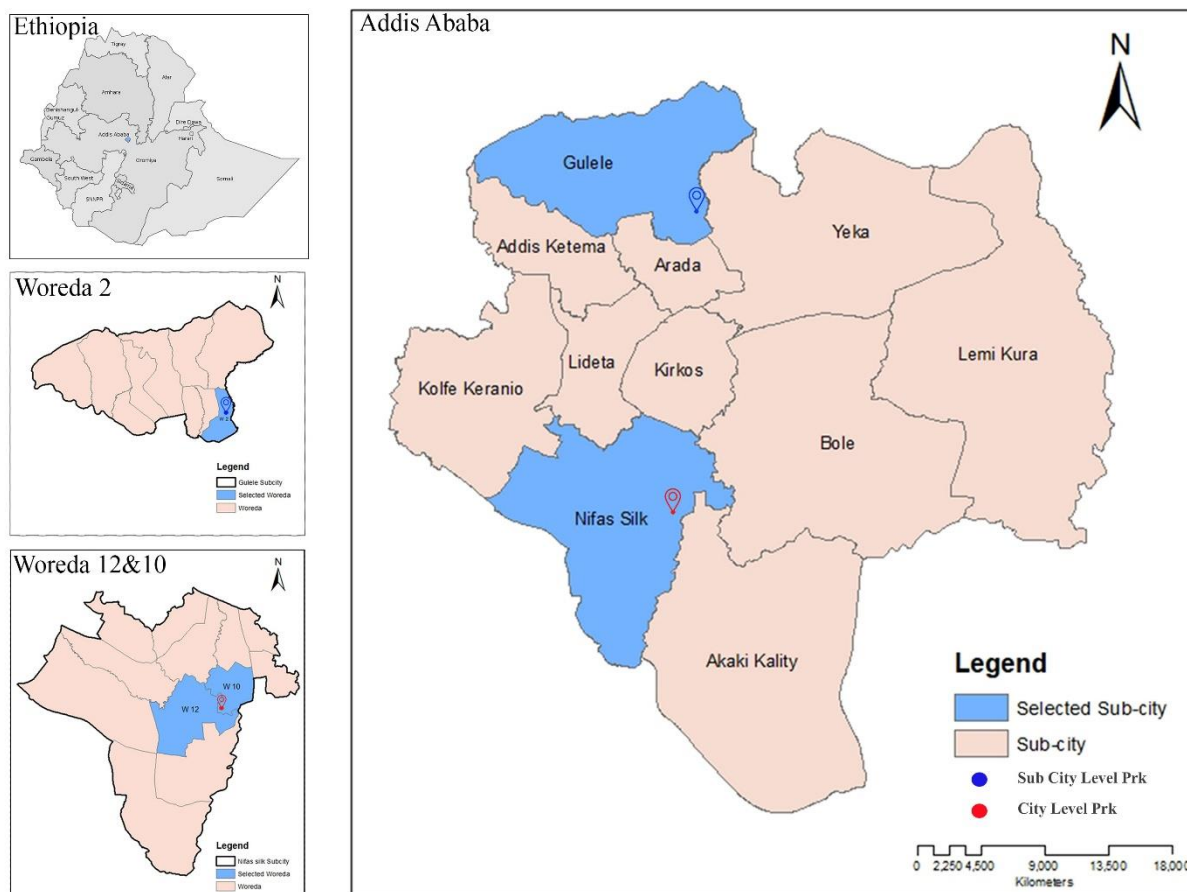


Figure 3.1: Map of Study Area

Table 3.1: Selected parks

Case studies	Park category	Area (ha)	Sub-city
Hamle 19 Park	Sub-city Park	6.7	Gulele
BihereTsige Park	City Park	14.2	Nefas Silk

Note. Selected parks for case study. Reference from (AACPDC, 2023)

3.2 Research Design and Procedures

The purpose of this study is to examine the internal and surrounding spatial characteristics of public parks and its influence on utilization based on users' perception. This study uses mixed method that aims to explain users' perceptions and spatial characteristics of the park through case study methodology. This approach was chosen due to the greater credibility that results from prioritizing both quantitative and qualitative data collecting equally (Mertler et al., 2017).

This study uses both descriptive and explanatory types of research designs. As per Kumar (2014) research descriptive research is useful to observe and describe a research subject or problem without influencing or manipulating the variables in any way. This attempts to explain the existing situation, phenomenon and describes users' attitudes towards an issue. In this case utilization and characteristics of each space and perception of users towards the park are going to be described from observation, interview and questionnaires. On other hand In order to explain and analyze the relationship between each variable, explanatory research method is used. Explanatory research is more concerned with showcasing, explaining and presenting what we already have. It attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon (Kuma, 2014).In this context, it helps to examine how users' perception on the spatial characteristics contribute to the utilization of the park.

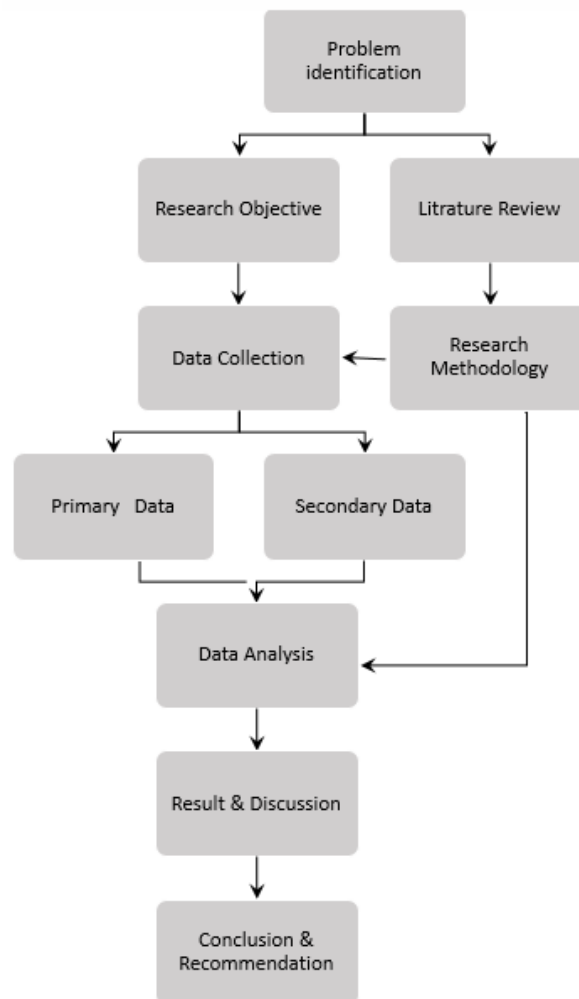


Figure 3.2: Research procedure

3.3 Types and Sources of Data

In this study, primary and secondary data were collected from various sources. Primary data were collected through interviews, questionnaires and field observation at the selected parks. To examine users' perception on the Spatial Characteristics of Public Park, Primary data are collected from randomly selected sample visitors. Secondary data are collected from reviewing books, published and unpublished documents, brochures and websites. The sources of secondary data are Addis Ababa City Plan and Development Commission, Addis Ababa City Administration Public Recreational Areas Corporation and Sub City Municipal Office.

3.4 Sampling Design

3.4.1 Sampling Techniques

In Addis Ababa there are four types of public parks, classified hierarchically as City level, Sub city level, Woreda level and Neighborhood parks. Hamle 19 and Bihere Tsige public parks are selected, which are Sub city level and City Level Park respectively. The Selection is based on different criteria's.

- Sub cities that had more than 70% access to public parks are selected.
According to Gupta et al. (2016) accessibility coverage of more than 70 % can be considered as sufficient. Seifu and Stallmacher (2020) identified sub cities with higher access to parks in Addis Ababa. Those are Gulele, Arada, Addis Ketema, Nifas Silk and Kirkos sub cities which are supposed to have a larger number of visitors based on their location and population density.
- Parks that hasn't been renovated or newly built. Since newly built parks attract new visitors.
- Parks on Different category (City and Sub city Level Park)
- Park that had compatible area coverage as per the minimum standard.
- Owned by Government
- Theme parks that include special purposes like Zoo, Botanic gardens are excluded because they attract many non-local tourists.

Based on the above criteria Bihere Tsige and Hamle 19 Public Parks are selected.

3.4.2 Sample population and sample size

The study uses Random sampling technique to select individuals which can provide necessary information about the issue. The study identified Public park visitors, Public park manager and Employees in order to gather necessary information about the public park spatial characteristics based on user Perception. To obtain reliable data, the researcher chose representatives from each park. Based on the data acquired from 1st quarter report in 2023, Bihere Tsige and Hamle 19 Public Park serve up to 289 and 78 visitors each day respectively. Yamane (1967:886) provides a simplified formula to calculate sample sizes. This formula is used to calculate the sample sizes for finite population, where the total population is known. Since the total no. of visitors is known, this formula is used to calculate the total sample size.

Yamane's formula

$$n = N / (1 + Ne^2)$$

Where n = Sample size

N = Study population

Where 289 and 78 visitors are taken as a study population for Bihere Tsige and Hamle 19 parks respectively.

E = Error of margin

For a study confidence level is 95%, e= 5%

Based on the above sampling technique a total of 168 and 65 visitors were selected and surveyed from Bihere Tsige and Hamle 19 Public Park respectively. The visitors were surveyed in the public park during weekends and weekdays.

3.5 Methods of data collection

Questionnaire:

Questionnaires were prepared in English and translated into Amharic then distributed to the users of the public park. Questionnaire was used in this study because it is important to examine the visitors' perception towards the existing spatial characteristics of the public parks.

Interview:

An interview helps to interact face to face with the users. Mainly unstructured interviews are used because this type of interview is useful for exploring and digging into a situation or phenomenon (Kvale, 2007). It is advantageous to extract depth information by asking further questions, especially from randomly selected public park users to examine qualitative issues about the park.

Observation:

This type of data collection was used to assess the internal and surrounding features of the park using various parameters such as existing condition of walkway, Waterfront, Shade, Playing facilities including all the variables to examine visitor's perception.

3.6 Method of data Analysis

The data collected in this study are both qualitative and quantitative data. To analyze quantitative data, SPSS (Statistical Package for the Social Sciences) is used. This will help to present the data in the form of percentages, graphs and charts. The study computed descriptive statistical methods such as percentage to answer users' perception on the park and the inferential statistics (spearman rho correlation coefficient) to determine relation between variables that indicate the spatial characteristics and utilization of the park.

User perception of the internal and surrounding spatial characteristics is assessed based on survey data using a quantitative scale. This scale categorized their perceptions in Likert scale and grouped variables into positive and negative perceptions accordingly. The variable was measured using seven internal spatial characteristics indicators: adequacy, comfort level, cleanliness, visual appeal, attractiveness, accessibility, and safety. Adequacy was determined by analyzing the current condition of eleven spatial characteristics (Area, Walkway, Water front, Shade, Bench, Lighting, Playing facilities, Public Restroom, Parking lot, Restaurant and Dustbin) of the park based on users perception and summarized them into a single adequacy value. Similarly user perception of the surrounding spatial characteristics is assessed based on survey data using a quantitative scale. This scale categorized their perceptions in Likert scale and grouped variables into positive and negative perceptions accordingly. The variable was measured using three indicators: Public Transport Routes Distance, Nearby Access Road and Surrounding Facility.

Then correlation analysis between each Spatial Characteristics independent variables and the park utilization dependent variables are conducted. Variables with strong and medium correlation with the utilization indicators are identified. Finally, Spatial Characteristics variables that both have a strong or medium correlation with park utilization and perceived negatively by visitors are identified as variables contributing to underutilization of the parks.

3.7 Method of data Presentation

Data is interpreted using different pictures, graphs, charts, percentage and tables.

3.8 Reliability and Validity

3.8.1 Reliability

Reliability refers to how consistently and dependably the research tools measure what they are intended to. In this study, reliability was ensured by using a structured questionnaire, which was tested through a pilot study involving 20 participants before the actual data collection. Insights from the pilot helped to revise any unclear or confusing items.

To assess internal consistency, Cronbach’s alpha was calculated. The result for Hamle 19 Park was 0.84, indicating strong reliability, while Bihere Tsige Park scored 0.713, which falls within the acceptable range as suggested by George and Mallery (2003).

Table 3.2: Reliability

Reliability Statistics (Hamle 19 Park)		Reliability Statistics (Bihere Tsige Park)	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.84	20	.713	20

3.8.2 Validity

Validity ensures that the research instruments accurately measure what they are intended to measure. Two types of validity were considered in this study. The Content validity was ensured by having the questionnaire reviewed by advisor and team experts in urban planning. Their feedback led to modifications that improved the relevance and comprehensiveness of the items. The Second one is Construct validity, it was verified by aligning the questionnaire items with established theoretical frameworks on park utilization. Each item was designed to reflect specific constructs such as adequacy, accessibility, and cleanliness.

Chapter Four

4. Results and Discussion

This section presents the key findings of the study based on data collected from visitors at Bihere Tsige and Hamle 19 Parks. A total of 243 questionnaires were distributed, 173 at Bihere Tsige Park and 70 at Hamle 19 Park. Data collection was conducted on both weekdays and weekends to ensure a broad and diverse representation of park users. Upon review, 2 questionnaires from each park were discarded due to incompleteness, and an additional 3 from each park were excluded to maintain alignment with the defined study population which is 168 and 65 for Bihere Tsige and Hamle 19 respectively. The analysis and discussion that follow are based on the remaining valid responses and are structured according to the main objectives of the research.

4.1 Characteristic of respondents and Travel time

Gender Disparity

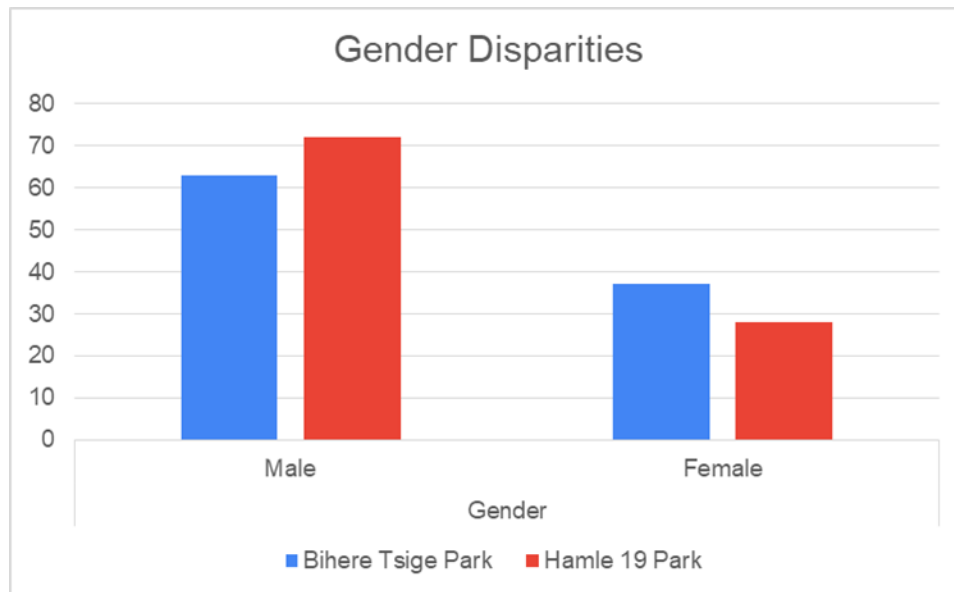


Figure 4.1: Gender Disparity

The survey findings reveal a notable gender disparity in the use of public parks, with 72.3% (47 Visitors) of users in Hamle 19 Park and 62.5% (105 Visitors) in Bihere Tsige Park being male. Across both parks, the majority of users are male. This imbalance indicates that the spatial characteristics of these parks are more inviting and accessible to men, a phenomenon observed in similar studies. For instance, De La Barrera et al. (2016) emphasize how gender influences park

use, and Wolch et al. (2014) argue that park designs often cater more to men due to safety concerns or social norms. Such disparities highlight the need for park designs that promote inclusivity and accessibility for all genders, addressing underlying social and environmental barriers (Hughes et al., 2016; Chen et al., 2019).

Age Distribution

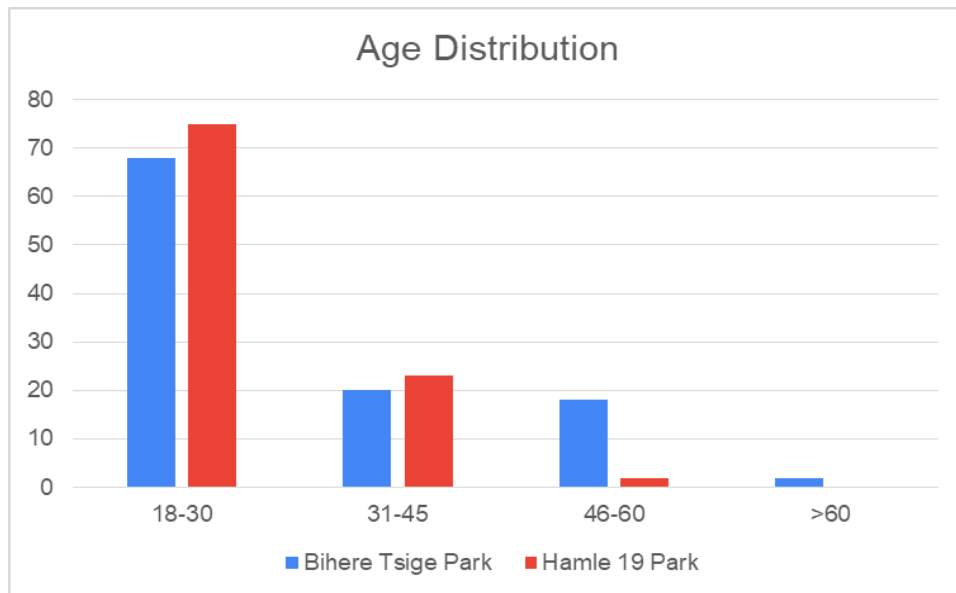


Figure 4.2: Age Distribution

The visitor survey indicates that young adults aged 18-30 are the predominant age group at both parks, constituting 67.8% (114 individuals) of visitors in Bihere Tsige Park and 75.3% (49 individuals) in Hamle 19 Park. Older adults aged 46-60 make up 17.8% (30 individuals) of visitors at Bihere Tsige Park, but only 2% (3 individuals) at Hamle 19 Park. Notably, there are no visitors above the age of 60 at Hamle 19 Park. The majority of young adults are likely drawn from nearby educational institutions, such as universities, Collages and High schools. The minimal presence of older adults, especially those over 60, suggests that the parks might lack features that appeal to this demographic, such as sufficient seating, shaded areas, or enhanced safety features (Smith et al., 2021; Williams & Brown, 2020).

Occupation

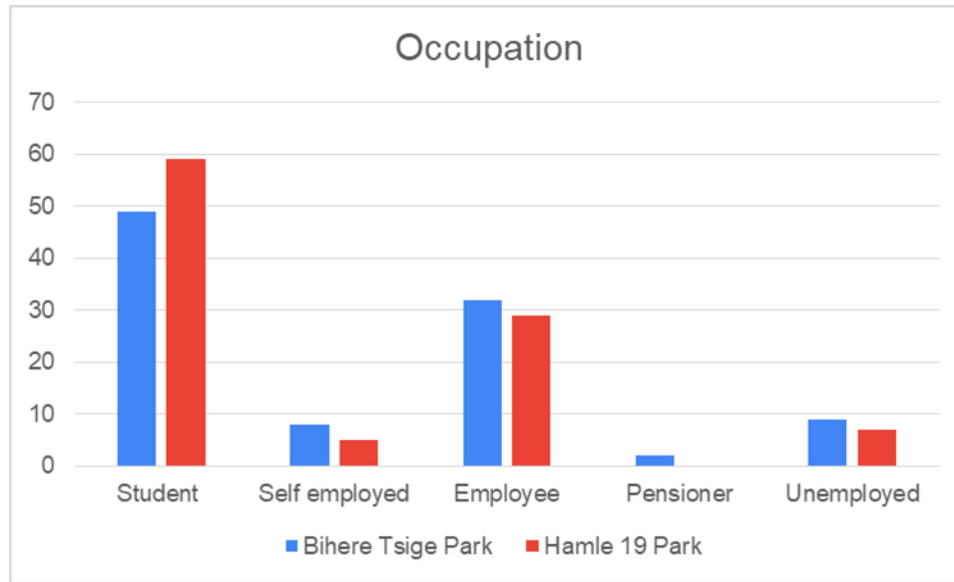


Figure 4.3: Occupation

Most visitors to both parks are either students or employed individuals. Specifically, 48.8% (82 individuals) of visitors in Bihere Tsige Park are students, while 32.1% (54 individuals) are employed. In Hamle 19 Park, 58.4% (38 individuals) are students and 29.2% (19 individuals) are employed. This demographic distribution indicates that the parks serve as popular spots for studying, relaxation, and social interaction during leisure time, reflecting their role as communal spaces catering to the needs of students and working professionals (Lee & Chen, 2022). The remaining visitors include self-employed individuals, pensioners, and those who are unemployed.

Travel Time to Parks

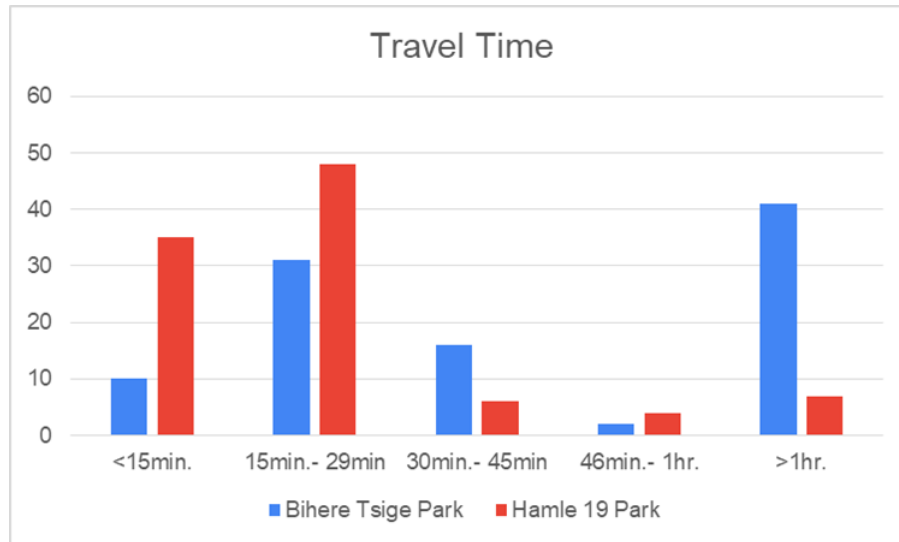


Figure 4.4: Travel Time to Parks

From the sample respondents, 41% (69 individuals) travel over 1 hour to reach Bihere Tsige Park, indicating its status as a prominent city-level park with unique features that justify the longer travel time. This is consistent with findings that city-level parks often attract visitors from broader areas due to their distinctive amenities or attractions (Wang et al., 2021).

Conversely, 47.7% (31 individuals) of users took 15 to 29 minutes to reach Hamle 19 Park, with only 35.3% (23 individuals) traveling less than 15 minutes. This suggests that Hamle 19 Park primarily serves as a neighborhood park, attracting local users who benefit from its proximity. The shorter travel times highlight its role in providing accessible green space for nearby residents (Wolch et al., 2014).

4.2 Internal Spatial Characteristics of the parks

The study have assessed the internal features of both parks using various parameters such as park area, walkways, waterfront, shade, playing facilities, public restrooms, parking lots, restaurants, benches, lighting, and dustbins to evaluate the public park adequacy based on users' response. And it was graded based on their number, their condition, maintenance level, accessibility, and user convenience.

Adequacy of Public Park Features

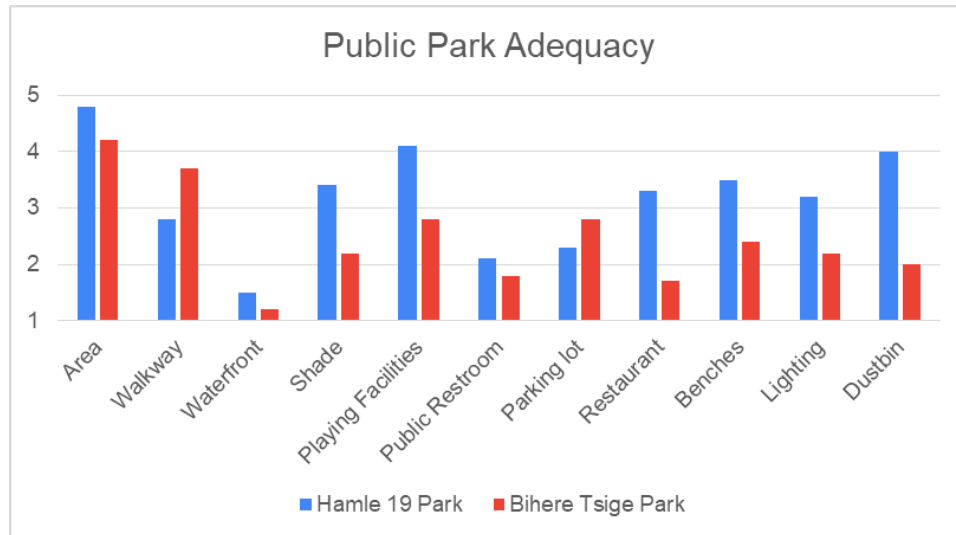


Figure 4.5: Adequacy of Public Park Features

4.2.1 Evaluation of BihereTsige Park

Area and Walkway: Both are in good condition, providing a pleasant environment for visitors. The well-maintained walkways enhance accessibility and encourage more foot traffic within the park.



Figure 4.6: BihereTsige Park (Field Survey, 2024)

Playing Facility and Restaurant: These are in fair condition. While functional, they require some maintenance to meet higher standards of safety and usability.



Figure 4.7: Playing Facility and Restaurant (Field Survey, 2024)

Waterfront, Shade, Public Restroom, Benches, Lighting, Parking Lot, and Dustbins: These elements are in poor condition. The waterfront area lacks hygiene, reducing its attractiveness and usability. Insufficient shade and deteriorating benches limit comfort for visitors, while inadequate lighting and poorly maintained dustbins contribute to a sense of neglect. The absence of a well-maintained public restroom and restaurant further diminishes the park’s appeal.



Figure 4.8: Shade and Public Restroom (Field Survey, 2024)

4.2.2 Evaluation of Hamle 19 Park

Area and Playing Facility: These features are in good condition, contributing positively to the visitor experience. The well-maintained playing facility and large coverage of the park, encourages family visits. While well maintained and accessible playing facility support a clean and comfortable environment.



Figure 4.9: Walkway and Playing Facility (Field Survey, 2024)

Walkway, Shade and Restaurant: These aspects of Hamle 19 park is in fair condition. The walkways, although usable, require improvement to enhance accessibility. Limited shade influence duration of stay during hotter periods and rainy season, also the restaurant facilities need upgrades to better serve visitors.



Figure 4.10: Walkway, Shade and Restaurant (Field Survey, 2024)

Benches, Dustbin, Waterfront, Public Restroom, Lighting and Parking Lot: These are in poor condition, the waterfront area is not in use due to lack of maintenance. The absence of adequate public restrooms and parking facilities poses significant challenges for visitors, potentially leading to reduced park usage. Even if there is no Dustbin and comfortable Benches in the park, the park is still kept clean and the benches are still functional. Lack of lighting in the park minimized its attractiveness and discouraged long stay during evening period.



Figure 4.11: Dustbin, Waterfront and Public Restroom (Field Survey, 2024)

4.2.3 Internal Spatial Characteristics of Bihere Tsige Park

The Safety, Accessibility, Attractiveness, Visibility, Cleanliness and Comfort of the park is rated by users in a Five point Likert Scale ranging from 1 – 5, Point Five was the highest value and One the lowest. The adequacy result is presented based on previous grading of the area, walkways, waterfront, shade, playing facilities, public restrooms, parking lots, restaurants, benches, lighting, and dustbins.

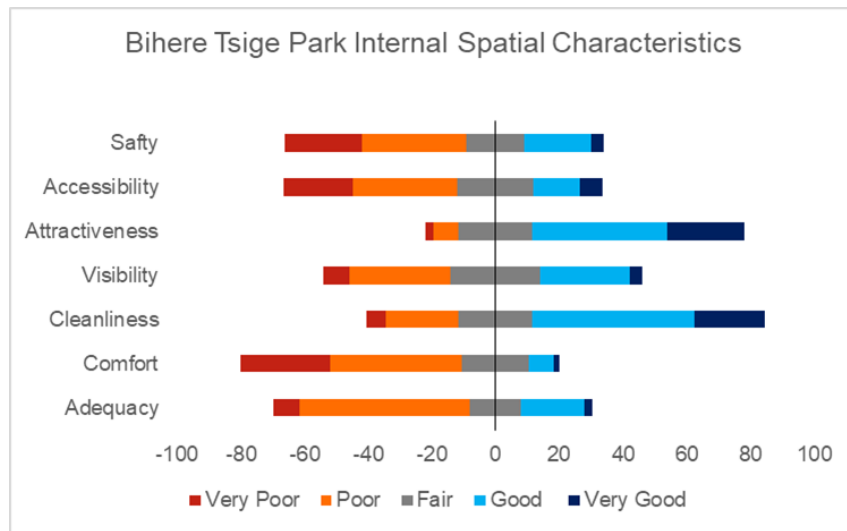


Figure 4.12: Internal Spatial Characteristics of Bihere Tsige Park

The survey reveals that 61.6% of users perceive the park’s features as inadequate, and 69.6% find the facilities uncomfortable, highlighting dissatisfaction with infrastructure and amenities. Despite this, 58.4% rate the park as clean, which suggests that while cleanliness is prioritized, it does not compensate for the inadequacies in comfort and infrastructure. Nady (2016) found similar patterns in Alexandria, where users appreciated the cleanliness of public parks, but poor infrastructure and lack of comfort led to overall dissatisfaction.

Regarding visual connectivity, only 32% of users were satisfied, though the park's attractiveness was viewed positively by the majority. This aligns with Rehan (2012), who noted that visual appeal can still draw visitors even when other spatial elements are lacking. However, low scores for accessibility (23.6%) and safety (24.8%) indicate significant barriers to usage. Wolch et al. (2014) argue that poor accessibility and safety often deter vulnerable groups from using parks, leading to decreased satisfaction, which is a key issue in many urban green spaces, including Bihere Tsige Park.

4.2.4 Internal Spatial Characteristics of Hamle 19 Park

The adequacy result is presented based on previous grading of the area, walkways, waterfront, shade, playing facilities, public restrooms, parking lots, restaurants, benches, lighting, and dustbins.

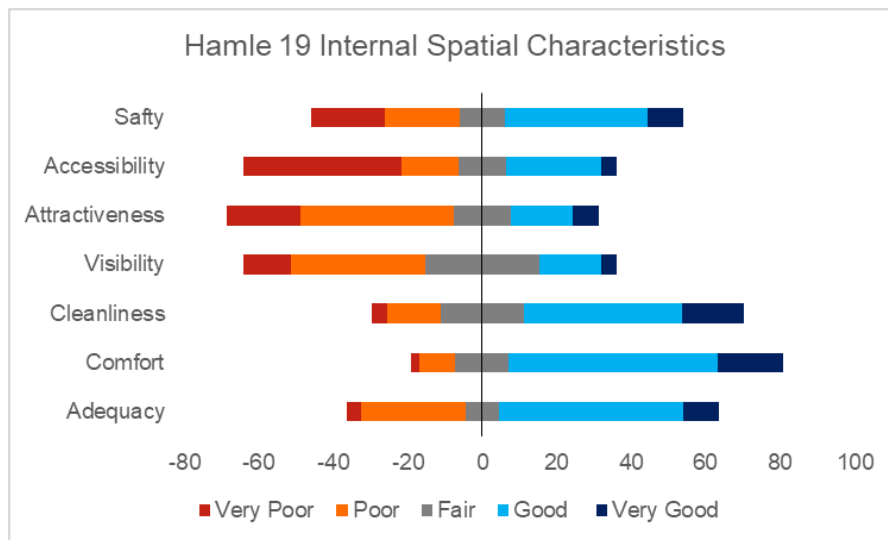


Figure 4.13: Internal Spatial Characteristics of Hamle 19 Park

The survey shows that Hamle 19 Park is perceived positively in terms of adequacy (59.2%) and comfort (73.6%), indicating that the park is better equipped to meet visitors' needs compared to others, like Bihere Tsige. This aligns with Loures et al. (2007), who found that parks with adequate facilities and comfortable spaces are generally better received by the public. Cleanliness, rated positively by 59% of respondents, is also crucial for maintaining user satisfaction, as supported by Herzele and Wiedemann (2003), who emphasized the importance of cleanliness in enhancing park usability.

However, the park struggles with visual connectivity, with 58.8% of users rating it poorly connected. This reflects Chiesura (2004)'s findings that poor spatial organization and lack of visual coherence can detract from the user experience. The low attractiveness rating (60.8%) suggests the park lacks aesthetic appeal, a significant factor in drawing visitors, as noted by Wang, Brown, and Liu (2015), who observed that aesthetic quality is a key component of park attractiveness.

Accessibility is another significant issue in Hamle 19, with 57.6% of users finding it difficult to move around the park. Van Herzele and Wiedemann (2003) highlight that poor accessibility can limit park use, especially for vulnerable groups. The mixed perceptions of safety also indicate a need for improvements in this area, aligning with Wolch et al. (2014), who noted that perceived safety is crucial for attracting a broader demographic to urban parks.

4.3 Spatial Characteristics of Surrounding Neighborhood

The analysis of the surrounding spatial characteristics for Public Park including, surrounding facilities, nearby access road, and proximity to public transport routes. It is rated by users in a Five point Likert Scale ranging from 1 – 5, Point Five was the highest value and one the lowest.

4.3.1 Surrounding Spatial Characteristics of Bihere Tsige Park

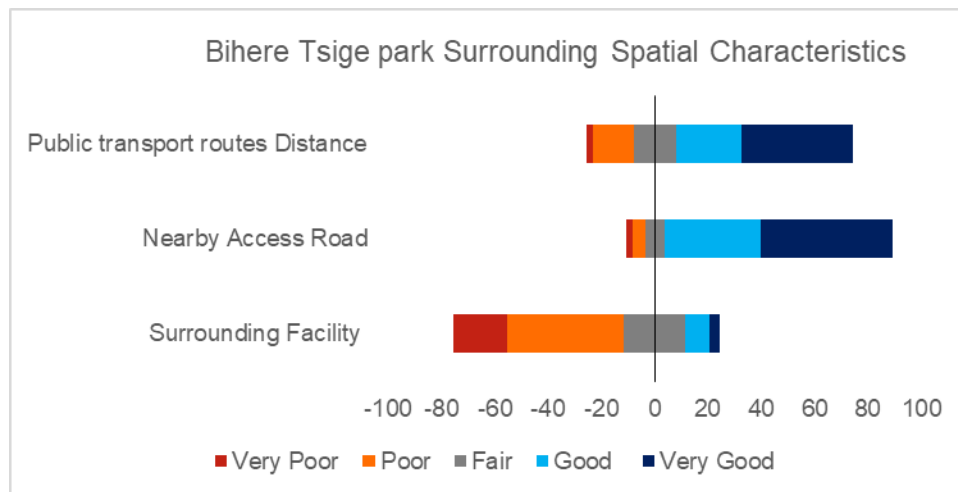


Figure 4.14: Surrounding Spatial Characteristics of Bihere Tsige Park

Surrounding Facility: The assessment of surrounding facilities reveals a mixed perception among visitors. According to the data, 4% of respondents rated the surrounding facility as very good, indicating small no of visitors are satisfied by the park's external service. And also, 8.8% of respondents rated it as good. However, 23.2% rated the facility as fair, 44% as poor, and 20% as

very poor, suggesting that a significant portion of visitors find the surrounding environment doesn't support the park activities. These results highlight areas for improvement, consistent with the recommendations by Bell et al. (2008), who advocate for enhancements in surrounding facilities to boost attractiveness and functionality.



Figure 4.15: Bihere Tsige park surrounding facility (Field Survey, 2024)

Nearby Access Road: The condition of the nearby access road is critical for determining how easily visitors can reach the park. The data shows that 49.6% of respondents rated the access road as very good and 36% as good. This positive feedback is supported by studies like those of Sallis et al. (2004), who assert that well-maintained access routes are essential for encouraging park visitation. However, a smaller portion of visitors found the access road to be fair (7.2%), poor (4.8%), or very poor (2.4%). These issues indicate areas that could benefit from further improvement, reflecting the need for infrastructure enhancements to ensure consistent accessibility for all visitors (Hussain et al., 2010).



Figure 4.16: Bihere Tsige park Near by Access Road (Field Survey, 2024)

Distance to Public Transport Routes: The proximity to public transport routes is another key external spatial characteristic influencing park accessibility. The data shows that 41.6% of visitors rated the distance to public transport routes as very good and 24.8% as good. This finding is consistent with the work of Chen et al. (2019), who highlight the importance of accessible public

transport in facilitating park visits. Despite the overall positive ratings, 16% of respondents rated the distance as fair, 15.2% as poor, and 2.4% as very poor. These ratings suggest that while the majority find the proximity manageable, there is still a subset of visitors who encounter challenges in accessing the park due to less convenient public transport options (Hughey et al., 2016).

4.3.2 Surrounding Spatial Characteristics of Hamle 19 Park

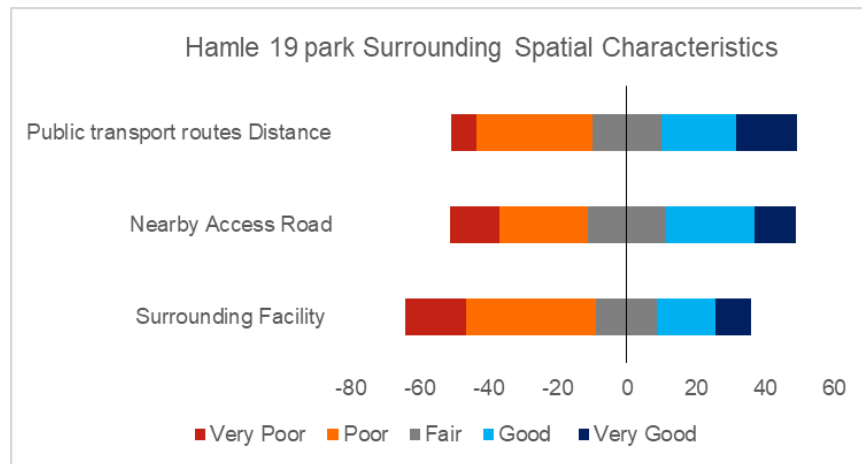


Figure 4.17: Surrounding Spatial Characteristics of Hamle 19 Park

Surrounding Facility: The facilities surrounding Hamle 19 Public Park are perceived less favorable. 37.6% of respondents rated these facilities as poor, and 17.6% rated them as very poor, highlighting significant dissatisfaction. However, 17.6% found the surrounding amenities to be fair, indicating that some visitors see room for improvement. Only 16.8% of respondents rated the facilities as good, and a smaller 10.4% rated them as very good. This suggests that while a portion of visitors are satisfied with the available services, a majority believe there is a need for significant improvements, aligning with Bell et al. (2008) emphasis on the importance of high-quality surrounding services for enhancing the park experience.

Nearby Access Road: The feedback on the nearby access road was mixed. Specifically, 12% of respondents rated it as very good, and 25.6% rated it as good. This indicates that a portion of visitors find the access road in relatively good condition, contributing to a more convenient and enjoyable entry to the park. However, significant concerns were also noted, with 22.4% of respondents rating the road as fair, 25.6% as poor, and 14.4% as very poor. These results suggest that while some visitors are satisfied, notable issues influence the majority of respondents,

reflecting the need for infrastructure improvements as highlighted by Sallis et al. (2004) and Hussain et al. (2010).



Figure 4.18: Hamle 19 nearby Access Road and Surrounding Facilities (Field Survey, 2024)

Public Transport Routes Distance: The distance to public transport routes was identified as a more challenging aspect of the park's surrounding spatial characteristics. While 17.6% of respondents rated the distance as very good and 21.6% as good, a considerable portion of visitors expressed dissatisfaction. Specifically, 20% rated it as fair, 33.6% as poor, and 7.2% as very poor. These ratings suggest that the park's accessibility via public transport may be a significant barrier for some visitors, potentially reducing their satisfaction. The perceived inconvenience in accessing the park through public transport could deter visitors, particularly those who do not have alternative means of transportation. This aligns with the findings of Chen et al. (2019), who underscore the importance of accessible public transport for facilitating park visits.

4.4 Correlation between users' perceptions and the utilization of public parks

4.4.1 Visiting frequency and Visiting Duration in the Park

Frequency of visit

The survey findings show that 31.5% (53 Individuals) and 40% (26 Individuals) of visitors use Bihere Tsige and Hamle 19 parks every weekend, while 57.7% and 44.6% visit occasionally. This pattern reflects the influence of spatial characteristics on visitation frequency. Research by Jaehyeong and Heungsoon Kim (2014) and Chen et al. (2019) highlights that parks with accessible layouts, multiple entrances, and diverse recreational spaces are used more frequently. Similarly, Grahn and Stigsdotter (2005) emphasize that well-designed areas with open green spaces and seating encourage frequent visits.

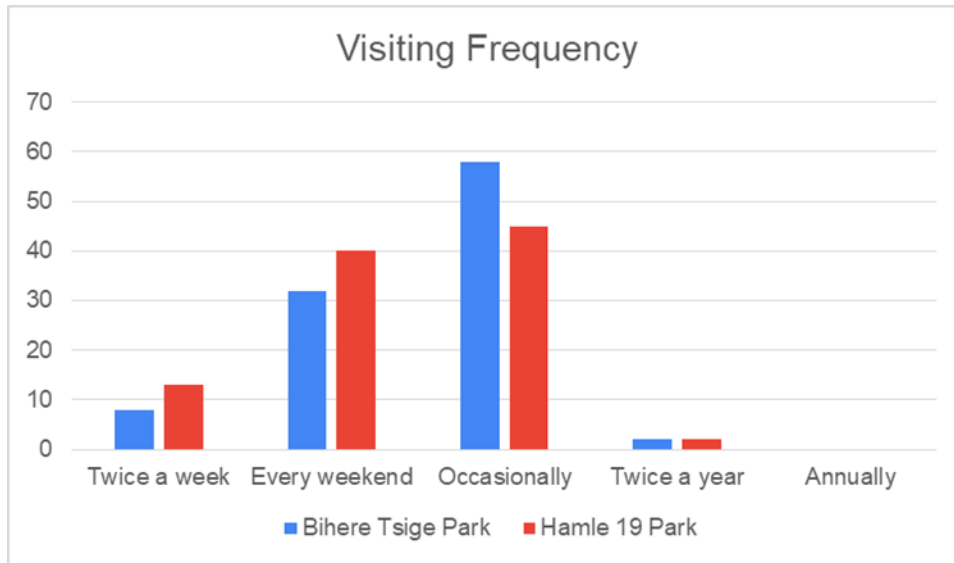


Figure 4.19: Visiting Frequency

The spatial design of these parks likely promotes regular use by providing inviting, accessible, and comfortable environments, which aligns with Wang, Brown, and Liu (2015) and Hussain et al. (2010), who show that diverse and well-maintained spaces drive frequent visitation. In both parks, these features meet the community's needs for recreation, resulting in higher weekend and occasional use.

Visiting Duration

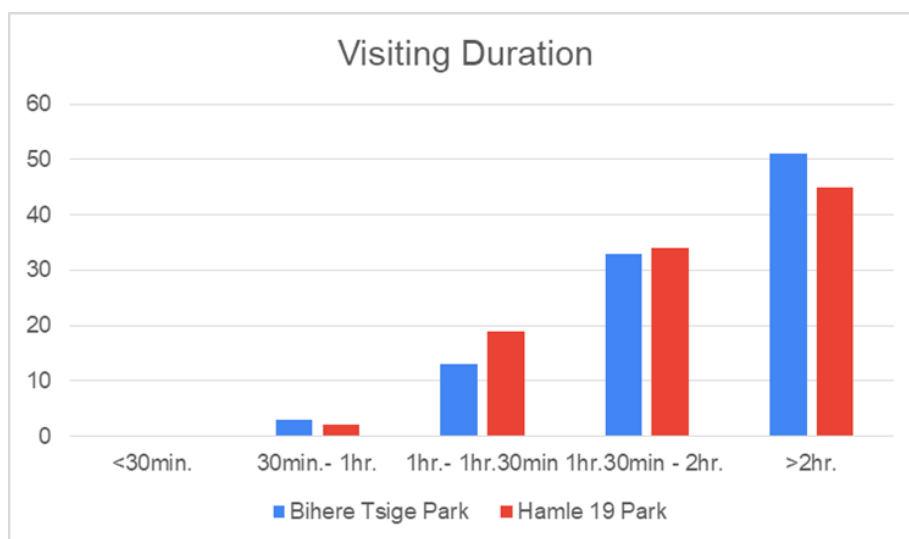


Figure 4.20: Visiting Duration

The survey reveals that 83.9% (141 Individual) of visitors in BihereTsigie Park and 78.4%(51 Individual) in Hamle 19 Park spend more than an hour and half during their visits, with no one staying for less than 30 minutes. Despite the parks not being well-maintained or designed, the large area coverage likely contributes to the longer duration of visits. Haase et al. (2017) discuss how larger parks naturally promote longer stays, as users often engage in more walking or physical activities due to the expansive space.

Fetene and Worku (2013) found similar patterns in Addis Ababa, where visitors tend to stay longer in larger urban parks regardless of maintenance quality, due to the time required to explore or utilize the space. Van Herzele and Wiedemann (2003) also note that larger parks provide more opportunities for relaxation or physical activity simply because of their size, which can encourage visitors to stay longer, even if other amenities are lacking.

Thus, the significant time visitors spend in Bihere Tsigie and Hamle 19 parks is a result of their expansive area, which supports prolonged use despite the lack of high-quality design and maintenance.

BihereTsigie Park: Correlation of Variables

Table 4.1: Bihere Tsigie Park correlation coefficient

Variables		Visiting Frequency	Duration of Stay	User perception	Reason for under utilization
Safety	Correlation Coefficient	0.55	0.45	Negative	√
	Sig.(2-tailed)	0.015	0.02		
Accessibility	Correlation Coefficient	0.55	0.6	Positive	x
	Sig.(2-tailed)	0.01	0.005		
Attractiveness	Correlation Coefficient	0.7	0.75	Positive	x
	Sig.(2-tailed)	0.01	0.005		

Visibility	Correlation Coefficient	0.35	0.4	Negative	√
	Sig.(2-tailed)	0.05	0.03		
Cleanliness	Correlation Coefficient	0.45	0.5	Positive	x
	Sig.(2-tailed)	0.03	0.02		
Comfort	Correlation Coefficient	0.8	0.85	Negative	√
	Sig.(2-tailed)	0.0001	0.000005		
Adequacy	Correlation Coefficient	0.75	0.8	Negative	√
	Sig.(2-tailed)	0.005	0.01		
Public Transport Routes Distance	Correlation Coefficient	0.5	0.55	Positive	x
	Sig.(2-tailed)	0.02	0.01		
Nearby Access Road	Correlation Coefficient	0.45	0.25	Positive	x
	Sig.(2-tailed)	0.07	0.1		
Surrounding Facility	Correlation Coefficient	0.5	0.55	Negative	√
	Sig.(2-tailed)	0.02	0.015		

Note. Bihere Tsige park correlation coefficient between the Dependent and Independent Variable

Highly Related Factors

Comfort

The analysis shows a strong correlation (0.80 to 0.85) between comfort and key visitor metrics such as visiting frequency, duration of stay, and average number of visitors, with highly significant p-values (below 0.0001). Comfort is critical for enhancing the overall visitor experience,

emphasizing its central role in attracting and retaining park visitors. This is supported by Kaplan (1995) and Korpela et al. (2001), who highlight the importance of comfort in influencing user engagement and satisfaction in public spaces.

Attractiveness

The analysis reveals a strong correlation (0.70 to 0.80) between attractiveness and key visitor metrics, including visit frequency, duration of stay, and average number of visitors, with highly significant p-values (below 0.01). Attractiveness plays a crucial role in shaping the overall visitor experience, underscoring its importance in attracting and retaining park visitors. This is supported by the findings of Barton et al. (2009) and Tyrväinen et al. (2007), which emphasize the influence of visual appeal on user behavior in public parks.

Adequacy

The analysis demonstrates a high correlation (0.75 to 0.8) between adequacy and key visitor metrics, with significant p-values (below 0.05). Adequacy positively influences visit frequency and duration of stay, indicating that sufficient facilities are essential for enhancing both the frequency and length of visits. However, its influence on the average number of visitors is moderate, suggesting that while adequate amenities are crucial, their effect on overall visitor numbers is less pronounced. This aligns with the findings of Cohen et al. (2006) and Huang et al. (2007), which highlight the importance of facility adequacy in shaping visitor experiences in public parks.

Moderately Related Factors

Accessibility

The analysis indicates a moderate to high correlation (0.55 to 0.65) between accessibility and key visitor metrics, with all p-values falling below 0.05. Accessibility exerts a moderate effect on visit frequency while demonstrating a strong positive influence on both the duration of stay and the average number of visitors. This underscores accessibility's significance in enhancing overall visitor perception, as supported by the findings of Dempsey et al. (2011).

Cleanliness

The analysis indicates a moderate to high correlation (0.45 to 0.5) between cleanliness and key visitor metrics, with all p-values below 0.05. Cleanliness positively contributes to all visitor metrics, although its influence is somewhat less pronounced compared to the more strongly correlated factors. Maintaining high standards of cleanliness is crucial for enhancing visitor experience, as evidenced by the findings of Hernández et al. (2010).

Public Transport Routes Distance

The analysis reveals a moderate to strong correlation (0.50 to 0.55) between the proximity of public transport routes and key visitor metrics, with significant p-values (below 0.05). Enhanced access to public transport positively influences the average number of visitors, suggesting that better public transport connectivity is essential for increasing visitor numbers. This finding aligns with the research of Sallis et al. (2006), which underscores the critical role of public transport accessibility in promoting park utilization.

Surrounding Facility

The analysis indicates a moderate correlation (0.50 to 0.55) between the availability of surrounding facilities and key visitor experience metrics, with all p-values falling below 0.05, signifying statistical significance. While the presence of surrounding facilities positively influences visitor experiences, its influence is not as pronounced as that of more closely related factors. This finding is consistent with the research conducted by Heynen et al. (2006), which emphasizes the role of surrounding amenities in enhancing visitor satisfaction.

Lowly Related Factors

Safety

The analysis reveals a low to moderate correlation (0.30 to 0.55) between safety and key visitor metrics, with p-values hovering around the threshold of 0.05, indicating marginal significance. While safety is essential for a positive visitor experience, its direct influence on visitor numbers and duration of stay is less pronounced compared to more strongly related factors. This finding reflects insights from Wolch et al. (2014), highlighting that while safety remains a critical concern, it does not significantly drive visitor metrics.

Visibility

The analysis indicates a low to moderate correlation (0.35 to 0.40) between visibility and key visitor metrics, with some p-values approaching or exceeding the threshold of 0.05, suggesting variable significance. While improving visibility has a modest effect on visitor experiences, its influence is less consistent compared to other factors. This finding aligns with the observations of Kaczynski et al. (2008), indicating that while visibility is beneficial, it is not as critical as other determinants of visitor engagement.

Nearby Access Road

The analysis reveals a low to moderate correlation (0.25 to 0.45) between the quality of nearby access roads and key visitor metrics, with some p-values exceeding 0.05, indicating limited statistical significance. While the quality of access roads is a contributing factor, its influence on visiting frequency, duration of stay, and average number of visitors is relatively minor compared to other influences. This finding is consistent with the research conducted by Xing et al. (2020), which underscores that while access roads play a role, their influence is less pronounced.

Hamle 19 Park: Correlation of Variables

Table 4.2: Hamle 19 park correlation coefficient

Variables		Visiting Frequency	Duration of Stay	user perception	Reason for under utilization
Safety	Correlation Coefficient	0.22	0.28	Positive	x
	Sig.(2-tailed)	0.12	0.08		
Accessibility	Correlation Coefficient	0.58	0.62	Negative	√
	Sig.(2-tailed)	0.0018	0.004		
Attractiveness	Correlation Coefficient	0.72	0.77	Negative	√
	Sig.(2-tailed)	0.0008	0.004		

Visibility	Correlation Coefficient	0.38	0.42	Negative	√
	Sig.(2-tailed)	0.04	0.02		
Cleanliness	Correlation Coefficient	0.48	0.52	Positive	x
	Sig.(2-tailed)	0.025	0.015		
Comfort	Correlation Coefficient	0.78	0.84	Positive	x
	Sig.(2-tailed)	0.0005	0.003		
Adequacy	Correlation Coefficient	0.27	0.32	Positive	x
	Sig.(2-tailed)	0.09	0.07		
Public Transport Routes Distance	Correlation Coefficient	0.18	0.23	Negative	x
	Sig.(2-tailed)	0.22	0.18		
Nearby Access Road	Correlation Coefficient	0.62	0.66	Negative	√
	Sig.(2-tailed)	0.004	0.002		
Surrounding Facility	Correlation Coefficient	0.53	0.58	Negative	√
	Sig.(2-tailed)	0.018	0.012		

Note. Hamle 19 park correlation coefficient between the Dependent and Independent Variable

Highly Related Factors

Attractiveness

The analysis demonstrates a high correlation (0.72 to 0.77) between attractiveness and key visitor metrics, with very low p-values ranging from 0.0008 to 0.004, indicating strong statistical significance. Attractiveness exerts a powerful positive influence on all visitor metrics, including

visiting frequency, duration of stay, and the average number of visitors. This highlights its critical role in enhancing the overall visitor experience and boosting park attendance, as supported by the findings of Kaplan & Kaplan (1989) and Cohen et al. (2006).

Comfort

The analysis reveals a high correlation (0.78 to 0.84) between comfort and visiting frequency and duration of stay, with extremely low p-values ranging from 0.0005 to 0.003, indicating strong statistical significance. Comfort plays a highly influential role in determining how often and how long visitors stay. However, its influence on the average number of visitors is relatively weaker, with a correlation coefficient of 0.37. This suggests that while comfort significantly influences visitor engagement, its influence on overall visitor numbers is more moderate, as highlighted by Harnik (2012).

Nearby Access Road

The analysis indicates a high correlation (0.62 to 0.66) between the quality of nearby access roads and key visitor metrics, with low p-values ranging from 0.004 to 0.002, signifying statistical significance. The quality of access roads has a substantial positive influence, particularly on the average number of visitors, where its influence is exceptionally strong. This underscores the importance of well-maintained access roads in attracting and accommodating visitors, as demonstrated by the research of Tyrväinen et al. (2005).

Moderately Related Factors

Accessibility

The analysis reveals a moderate to high correlation (0.58 to 0.62) between accessibility and key visitor metrics, with low p-values ranging from 0.0018 to 0.004, indicating strong statistical significance. Accessibility positively influences all visitor metrics, demonstrating a moderate influence on visiting frequency and a strong influence on both the duration of stay and the average number of visitors. This suggests that while accessibility is an important factor, its impact varies depending on the specific metric, as highlighted by Ewing et al. (2006).

Surrounding Facility

The analysis indicates a moderate to high correlation (0.53 to 0.58) between surrounding facilities and key visitor metrics, with low p-values ranging from 0.018 to 0.012, signifying statistical significance. Surrounding facilities have a moderate influence on all visitor metrics, exhibiting a slightly stronger influence on the average number of visitors. This suggests that the availability of amenities near the park positively contributes to visitor engagement, although it is less influencing than more highly related factors, in line with the findings of Heynen et al. (2006) and Kaczynski et al. (2008).

Cleanliness

The analysis reveals a correlation coefficient ranging from moderate (0.48 to 0.52), with low p-values (0.025 to 0.015). Cleanliness positively influences all visitor metrics; however, its influence is moderate compared to other factors. While maintaining cleanliness is crucial for visitor satisfaction, it is less influential than aspects such as comfort and attractiveness. These findings are consistent with the insights of Hernández et al. (2010), which emphasize the importance of cleanliness in enhancing visitor experiences in public parks.

Visibility

The analysis shows a moderate correlation (0.38 to 0.42) between cleanliness and key visitor metrics, with low p-values ranging from 0.04 to 0.02, indicating statistical significance. Visibility positively influences all visitor metrics, though its influence is moderate compared to other factors. While maintaining visibility is essential for visitor satisfaction, it is less influential than factors such as comfort and attractiveness. This observation reflects insights from Hernández et al. (2010).

Lowly Related Factors

Public Transport Routes Distance

The analysis reveals a correlation coefficient ranging from low to high (0.18 to 0.23), with p-values varying from non-significant to very low (0.22 to 0.18). Proximity to public transport routes significantly influences the average number of visitors, although it exhibits minimal significant influence on visit frequency and duration of stay. This indicates that while access to transportation is a crucial factor in attracting visitors, its influence on other visitor metrics is less pronounced.

These findings are consistent with the work of Mokhtarian & Cao (2008), which underscore the role of transport access in shaping visitor patterns in public parks.

Safety

The analysis indicates a correlation coefficient that falls within the low range (0.22 to 0.28), with some p-values approaching significance (0.12 to 0.08). Safety exhibits less consistent influence on visitor metrics. While it is an important factor, its direct influence on visiting behavior is relatively minor compared to other aspects, reflecting insights from Wolch et al. (2014).

Adequacy

The analysis reveals a correlation coefficient ranging from low (0.27 to 0.32), with p-values (0.09 to 0.07). Adequacy shows a low correlation with all visitor metrics, suggesting that its influence on visitor experience is minor compared to other factors. This indicates that while adequacy plays a role, its influence on visitor metrics is less significant. These findings align with the observations of Harnik (2012), which highlight that the adequacy of facilities has a limited effect on overall visitor satisfaction in public parks.

Chapter Five

5. Conclusion and Recommendations

5.1 Conclusion

Regarding the internal spatial characteristics of the park, it shows different result for the two parks. In Bihere Tsige Park, while accessibility, attractiveness and cleanliness positively perceived by users, it do not fully balance the dissatisfaction in safety, Visibility, Comfort and Adequacy. Low satisfaction with these variables significantly undermines particularly for vulnerable groups like female users. Hamle 19 Park is positively perceived in terms of safety, Cleanliness, Comfort and Adequacy, with a higher percentage of visitors expressing satisfaction. However, the Accessibility, Attractiveness and Visual connectivity, are perceived negatively by the park users'.

Regarding the Surrounding spatial characteristics' of the parks, In Bihere Tsige Public Park, the surrounding facilities receive the lowest ratings, only a small percentage of respondents perceived these facilities positively. This shows that the amenities surrounding the park do not fully meet visitors' expectations. In contrast, nearby access roads and public transport route distance receive favorable ratings, with a majority of visitors indicating satisfaction. For Hamle 19 Public Park, users' perception on the surrounding spatial characteristics reveal visitor dissatisfaction, on the Surrounding facilities, nearby access roads, and public transport access.

The correlation analysis of Bihere Tsige Public Park showed that, except for the nearby access road, all spatial characteristics indicators variables have strong or medium correlations with park utilization. Among these, safety, visibility, comfort, adequacy, and surrounding facilities were perceived negatively by visitors. Consequently, the underutilization of Bihere Tsige Public Park was attributed to these variables. For Hamle 19 Public Park, the analysis indicated that accessibility, attractiveness, visibility, cleanliness, comfort, the nearby access road, and surrounding facilities have strong and medium correlations with park utilization. Among these, accessibility, attractiveness, visibility, public transport routes distance, nearby access road, and surrounding facilities were perceived negatively by visitors. Therefore, the underutilization of Hamle 19 Public Park was linked to these factors.

5.2 Recommendations

To enhance the adequacy of the parks, parks should be equipped with functional and appealing features. Walkways must be wide and decorative using materials like mosaics or natural stone. Add clean water features such as fountains. Ensure visitor safety with railings near water areas and add proper fencing around the compound. Comfort can be enhanced with shaded seating (pergolas, canopies), well-maintained playgrounds for all age groups, and picnic spots. Clean, accessible public restrooms should be placed near high-traffic areas. Parking facilities must be expanded and organized for different vehicle types. Additionally, benches, energy-efficient lighting, food kiosks or cafés, and well-distributed dustbins should be integrated across the park.

To improve the internal spatial characteristics, Public park design should prioritize inclusivity and safety for all users. Provide multiple, well-marked entry points with ramps and wide paths for accessibility. Safety measures should include ample lighting, directional signage and emergency contact information. Maximize visibility across park zones by minimizing obstructions. Improve user comfort with shaded seating areas and ensure attractiveness by incorporating diverse vegetation, flowers, and water features. Allocate spaces for varied activities such as outdoor gyms, performance stages, and children's play zones.

To enhance surrounding spatial characteristics, the areas surrounding the park must support and enhance its use. Include small cafés, kiosks, or local shops at the perimeter that complement the park's natural setting. Maintain nearby access roads with safe pedestrian crossings. Ensure that public transport options like bus stops or metro stations are located within a short walking distance from park entrances to facilitate easy access.

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APPENDICES

Appendix I: Questionnaire

Hello, Good Morning/Afternoon

Thank you for agreeing to take part in this questionnaire and help us learn about your experience in the park. I am on a quest to examine the spatial characteristics of public parks that influence its utilization depending on users' perception, internal spatial characteristics and the surrounding neighborhood, which is why I need your input. And don't worry about your data confidentiality, this questionnaire is solely used for academic purposes. Be assured that your responses will remain completely anonymous.

Thank you for your participation in advance. Please answer the following questions by putting \checkmark in the box for the answer or choose the answer that comes closest to your opinion or by writing your answer in your own words in the provided area.

Please choose the best answer from the choices given in each question with respect to the current spatial condition of the park.

Part I: Users' Perception of Spatial Characteristics:

Park Features and Comfort level

1. How adequate are the Public Park Features?

a) V. Adequate b) Adequate c) Fair d) Inadequate e) V. Inadequate

2. Level of comfort for provided Facilities

a) V. Comfortable b) Comfortable c) Fair d) Uncomfortable e) V. Uncomfortable

3. General park feature condition in the space

a) Very Good b) Good c) Fair d) Poor e) Very Poor

4. How clean is the Environment?

a) Very Good b) Good c) Fair d) Poor e) Very Poor

Visual Connectivity

5. How well can you visualize the internal spaces from different direction?

- a) Very Well b) Well c) Moderate d) Poor e) Very Poor

Attractiveness

6. How attractive is the park?

- a) V. Attractive b) Attractive c) Neutral d) Unattractive e) V. unattractive

Accessibility

7. Is it easy to move around in the park?

- a) V. Easy b) Easy c) Moderate d) Difficult e) V. Difficult

8. Rate the accessibility of the park for all ages and disable groups?

- a) High b) Moderate c) Somewhat d) Difficult e) V. Difficult

Safety

9. How safe do you feel in the park?

- a) V. Safe b) Safe c) Neutral d) Unsafe e) V. Unsafe

Part II: Utilization and Purpose of space Visitation

1. How often do you visit the park?

- a) Twice a week b) Every weekend c) Occasionally d) Twice a year e) Annually

2. How long do you usually spend in the park?

- a) Longer than four b) Two to Four c) One to Two d) Between half and one hour e) Half an hour or less

3. For what purpose do you currently use the park for? (You can choose more than one options.

- a) Tranquility b) Reading c) Exercising d) Playing
e) Child playing f) Socialization g) Walking h) Bike Riding
i) Appreciation of nature Other (Please Specify) _____

4. Who accompanies you during your visit to the park?
 a) Nobody b) Family c) Friend d) Partner e) Spouse f) Child
 g) Other (Please Specify) _____
5. Do any of the following factors currently limit your stay in the park? (You can choose more than one options.)
 a) Limited variety of play opportunities
 b) Lack of park furniture such as seating
 c) Lack of shade
 d) Access to Toilets
 e) Unsafe Environment
 f) Other Please Specify _____

Part III: Internal Spatial Characteristics influencing Utilization

1. Rate the favorableness of each internal spatial characteristic of the park?

No.	Public Park Features	Highly favorable to V. unfavorable				
		1	2	3	4	5
1	Area of the park					
2	Walkway					
3	Bicycle lane					
4	Waterfront (Swimming Pool, Pond, Fountain)					
5	Shade					
6	Playground (Football, Basketball, Tennis etc)					
7	Playing Facilities (Swing, Slide, Seesaw etc)					
8	Shelter					
9	Public Restroom					
10	Parking lot					
11	Restaurant					
12	Benches					
13	Lighting					
14	Dust Bin					

2. How do you rate the overall influence of the internal spatial characteristics on your engagement within the park?

- a) Highly b) Moderately c) Somewhat d) Low e) Not

Adjacent Neighborhood characteristics

3. To what extent does the surrounding area spatial condition influence your decision to visit and utilize the park?

No.	Public Park Features	Highly to V. Low				
		Highly	Mode rately	Some what	Low	Not
1	Surrounding facility					
2	Nearby access road					
3	Public transport routes Distance					
4	Accessibility					

4. How well can you visualize the adjacent neighborhood?

- a) Very Well b) Well c) Moderate d) Fairly e) Not Well

Part IV:-User Characteristics

1. Gender

- a) Male b) Female

2. Age

- a) 18-30 b) 31-45 c) 45-60 d) >61

3. Occupation

- a) Student b) Self-employed c) Employee d) Pensioner e) Unemployed

4. How long does it take to reach the park from your home?

- a) Less than 15 min. b) 15-30 min c) 30-45 min. d) 45-60 min. e) More than 1 hr

THANK YOU FOR YOUR TIME!

Appendix II: Publishable Manuscript

SPATIAL CHARACTERISTICS AND THEIR INFLUENCE ON PUBLIC PARK UTILIZATION: A CASE STUDY OF ADDIS ABABA, ETHIOPIA

Meron Tadesse¹ Dr. Aramde Fetene²

ABSTRACT

This research explores how spatial characteristics influence public park utilization, based on user perception. By examining the users perception on the specific spatial features of the park, the study identify highly related variables which influence the utilization of the park and gives a guidelines to optimize parks. This study uses mixed method through case study methodology. It uses both descriptive and explanatory types of research designs. One city level park and one sub city level park is selected as a case study based on different selection criteria. Data were collected for a randomly selected park visitors through questionnaire and interview. The data is analyzed using SPSS (Statistical Package for the Social Sciences).A statistical procedure was used for the study, and the correlation analysis and the significance of the relationships were tested. The results indicate a significant relationship between spatial characteristics and urban park utilization. Ten independent variables were shown to significantly correlate and none of the variables are negatively correlated. These elements should be purposefully taken into account during the park design and development process in order to maximize park utilization.

Keywords: Public Park, Spatial characteristics, Utilization, Perception

1. Introduction

Green infrastructure is a network of both natural and human-managed ecosystems, including urban parks, community gardens, green buildings, and green roofs (McPhearson et al., 2016). Numerous city recreational public parks are dealing with various issues related to management and usage. Perceptions of green spaces by users can be investigated by looking at how they are valued, including whether they are preferred over other areas (De La Barrera et al., 2016).

According to Kassaye (2017), the majority of the city's public parks were primarily utilized for community events like weddings and graduations. Furthermore, the locals use them as places to meet, read, and relaxation. Therefore, Analyzing the reason behind underutilization of the existing parks related to the spatial characteristics of the public parks and users perception will curb the problem of changing land uses from urban Green Infrastructure and underutilization of the existing one. It will play a major role in maximizing the utilization of the parks by building a positive perception towards the park through analyzing users' needs and spatial solutions towards their main concern. This can be a good input for future public park developments.

1.1 Background of the Study

According to Nady (2016), urban parks are regarded as public areas. They are crucial for improving the standard of living in cities. They offer important ecosystem services that benefit metropolitan areas in terms of the environment, aesthetics, recreation, physiology, and economy.

Accessibility is fundamental for a better utilization of public parks. The accessibility of parks promotes regular use of urban green space. Similarly, it is claimed that factors related to visual accessibility, such as sight distance, park visibility, and illumination level within and surrounding the parks, affect how often people use public parks (Das & Honiball, 2016).

The utilization of urban parks is significantly influenced by people's perception. Furthermore, one of the main reasons urban dwellers did not visit and make use of public recreational parks was physical distance (Erdogan, 2005).

According to the literature, some of the elements that influence public park utilization include accessibility, environmental, and social issues. The reason for underutilization of the public parks are attributed to many factors that include lack of amenities, inappropriate location, lack of

attractiveness, lack of accessibility, behavioral issues like lack of time and life style, social issues like crime or fear of crime to name a few (Das and Honiball,2016).

1.2 Statement of the problem

Green areas and parks are labeled as a lung of a city which reflects the high significance of parks for the city and its inhabitants (Jones, 2018). In Addis Ababa, Public parks have been provided by the government and private developers for different purposes. Hamle 19 and Bihere Tsige public parks were established 80 years ago for the community purposes. Currently, these parks are only active during weekends, wedding seasons and holiday times on other days it is barely utilized. Other than this the parks are mostly used for non-green purposes such as parking lot (Seifu, & Stellmacher, 2021)

In the last three years the city has been developing new public parks in the inner and periphery of the city. Compared to the previous time, people tend to visit and mesmerize public parks more than the previous decade (Guadie, D. and Getahun, TT.et al.2022). This raised the question why the existing parks and green areas are not still being utilized like the new ones. Those newly built public parks are eye opening developments for the city governors, and how the people react to such spaces. By assessing users ‘perception and by analyzing the spatial characteristics of the parks the author will recommend the appropriate planning solutions to initiate the existing park utilization and recommend the spatial characteristics of effective parks for future public park developments.

1.3 Research Objective

1.3.1 General Objective

The primary objective of this research is to examine the internal and external spatial characteristics of public parks and its influence on utilization based on users’ Perception.

1.3.2 Specific Objective

To achieve this goal, the study focuses on the following specific objectives:

- To examine the existing internal spatial characteristics of public parks based on users perception

- To investigate the surrounding area spatial characteristics based on users perception
- To explore the relationship between users' perceptions of the internal and surrounding spatial characteristics of the park and the utilization of public parks.
- To recommend possible planning solutions on spatial characteristics of Public Park that affect their utilization

1.4 Research Question

To address the objectives and provide solutions, the study seeks to answer the following key research questions:

1. What are the users' perception of the internal spatial characteristics of the park?
2. What are the users' perception on the surrounding area spatial characteristics of the park?
3. How does the internal and the surrounding area spatial characteristics contribute to the utilization of public parks?
4. What are the optimum spatial characteristics of Public parks for better utilization?

1.5 Scope of the Study

The study focused on two public parks: Bihere Tsige Park(14.2 hectares) and Hamle 19 Park (6.7 hectares),located in Nifas silk (Woreda 10 and Woreda 12) and Gulele (woreda 2) sub-cities respectively. The research primarily examines the internal spatial characteristics of these parks and their influence on user experience. Additionally, it assesses the integration between the parks and their surrounding neighborhoods, emphasizing spatial factors that significantly influence park utilization. Thus the focus of the study is limited to the internal spatial characteristics and connection with the surrounding environment, including users' perception of the park.

1.6 Significance of the Study

The initial benefit of this research is to recommend possible planning solutions on spatial characteristics of Public Park. It will forward users' perception on the spatial characteristics of the park, which creates an active and functional environment where they feel free and welcome to use. The research can be a guideline for designing, locating as well as planning of public parks for the upcoming development.

2. Literature Review

2.1 Urban Green Infrastructure (UGI)

UGI refers to interconnected natural and semi-natural spaces that provide ecological, social, and economic benefits (Benedict & McMahon, 2002). It includes parks, forests, wetlands, and urban agriculture, enhancing urban resilience and livability (Samson, 2014).

Public parks enhance urban life by providing recreational, social, and aesthetic benefits. They are categorized into living-zone parks for daily use and theme parks for specialized activities (Jaehyeong & Heungsoon, 2014).

2.2 Preference and Perception

Preference refers to the selection of one environment over another, influenced by its effectiveness in supporting human function (Kaplan & Kaplan, 1989; Farahani&Maller, 2018). Perception, meanwhile, involves both sensory experiences and the meanings attributed to green spaces (Swanwick, 2009). It is shaped by individual values, experiences, and socio-cultural contexts (Scott, 2003).

2.3 Value of Public Park

Public parks are vital to urban green infrastructure, offering environmental, social, economic, and health benefits. They help mitigate pollution, regulate temperature, and provide wildlife habitats (Chiesura, 2004; Xing &Brimblecombe, 2020). Socially, they foster community cohesion, strengthen local identity, and support vulnerable groups by providing inclusive spaces for interaction and recreation (Bell et al., 2008). Economically, parks increase property values, attract investment, and enhance the city's appeal, boosting local businesses and tourism (Rehan, 2012; Arvanitidis, 2008).

Health-wise, parks promote physical activity, reduce stress, and lower the risk of diseases like diabetes, contributing to overall well-being (Maas, 2006). Additionally, they offer essential spaces for relaxation and leisure, helping urban residents reconnect with nature and improve their quality of life (Hailegiorgis, 2017; Saelens& Kraft, 2004).

2.4 Spatial and Physical Characteristics of Public parks

The use and popularity of urban parks are shaped by both external factors, such as location, accessibility, and surrounding land use, and internal factors, like amenities and spatial layout

(Chen et al., 2021). Accessibility, including proximity, walkability, and transport access, plays a key role in park utilization (Bahriny, 2020). Park location and area should follow urban planning standards to ensure accessibility for all, including those with disabilities, fostering social inclusion and sustainability. Well-managed parks with quality facilities enhance their appeal and increase usage (Yeshitela, 2020).

Permeability, or the ease of movement through a park, and safety also affect park use (Gwedla, 2019). Larger parks generally attract more visitors due to their greater ecological diversity and amenities (De La Barrera et al., 2016; Van Herzele, 2003). Proximity to parks is important, with parks within 400 meters being ideal for accessibility (Holm, 1998). Park quality, including well-maintained facilities and natural elements, contributes to physical activity and social engagement (McCormack et al., 2010; Giles-Corti et al., 2005). Elements like spaciousness, nature, culture, and appropriate facilities further enhance the park experience, making parks more inviting and functional (Grahm, 1991; Van Herzele, 2003).

2.5 Factors influencing Urban Open Space Utilization

Urban open spaces significantly influence residents' daily lives, impacting social interactions and individual well-being (Nikšič and Watson, 2018). Factors such as uninterrupted walkways, clear separation of communal and private spaces, and physical comfort enhance the use of these areas. Vibrant, culturally engaging environments also encourage activities like jogging, dining, and socializing.

Street furniture, including benches, playground equipment, and public toilets, is essential for ensuring comfort and functionality in urban open spaces (Şatir and Korkmaz, 2005). These features contribute to the long-term appeal and usability of parks.

Several factors determine the success or underutilization of urban parks, including supply, demand, spatial links, and population density. Supply factors include natural features, recreational facilities, and park infrastructure. Proximity to city centers and maintenance can also influence park usage. Demand factors, such as socio-demographic characteristics and residential proximity, play a significant role in determining park visitation. Spatial links, including transportation access and mixed land use, enhance park accessibility, while higher population density is associated with increased park utilization (Nordh & Østby, 2013).

2.6 Underutilization of Public parks

The underutilization of parks is often caused by factors such as poor location, lack of amenities, inadequate accessibility, and social issues like crime. Successful park utilization depends on factors like accessibility, engagement, image, comfort, and sociability, as outlined by the Project for Public Spaces (PPS). Accessibility is influenced by road communication, parking, and public transportation options. Additionally, visual accessibility and movement options like pedestrian paths and transportation nodes near parks significantly enhance usage (John, 2023).

While larger parks tend to attract more visitors, size alone does not guarantee higher utilization. The quality of amenities and accessibility often plays a more critical role than the park's size (Chen, 2021). PPS also emphasizes factors such as continuity, closeness, connection, legibility, walkability, and infrastructure for both automobile and pedestrian access as key to evaluating park accessibility. To improve park use, it's essential to assess the spatial characteristics that influence public park utilization before developing planning and design guidelines.

3. Methodology

3.1 Description of the Study Area

This study focuses on Addis Ababa, the capital of Ethiopia, covering an area of 430.2 km² in the 2023 structural plan. The city's population was estimated at 4.02 million in 2023 (CSA, 2013), with a population density of 7,632 people per km². In 2017, the city had 113.7 ha of urban parks, offering less than 1 m² of green space per person, far below the recommended 9 m² (WHO, 2012).

The study area includes Gulele and Nifas Silk Lafto sub-cities, with projected populations of 394,375 (12,768 people/km²) in Gulele and 466,184 (6,669 people/km²) in Nifas Silk Lafto (Ethiopian Statistics Service, 2024). BihereTsigie and Hamle 19 Public parks, covering 14.2 km² and 6.7 km², are selected from these sub-cities for the study.

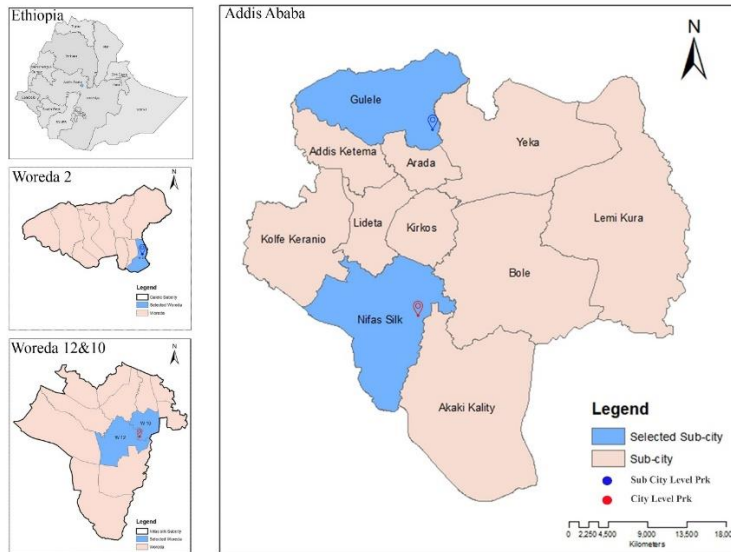


Figure 3.1: Map of Study Area

3.2 Research Design and Procedures

This research aims to examine the internal and external spatial characteristics of public parks and their influence on utilization based on users' perceptions. A mixed-method approach is used, combining both quantitative and qualitative data collection to enhance the credibility of the findings (Mertler, 2017).

The study employs descriptive and explanatory research designs. Descriptive research is used to observe and describe the current situation without manipulating variables, focusing on users' perceptions and the utilization of park spaces through observations, interviews, and questionnaires (Kumar, 2014). Explanatory research, on the other hand, is used to explore the relationships between variables and explain how users' perceptions of spatial characteristics affect park utilization (Kumar, 2014).

3.3 Types and Sources of Data

This research collects primary data through interviews, questionnaires, and field observations in selected study areas. Data were gathered from randomly selected visitors to examine their perceptions of the spatial characteristics of public parks. Secondary data were obtained from sources like the Addis Ababa City Plan and Development Commission, and the Public Recreational Areas Corporation.

3.3.1 Sampling Design

Two parks were selected based on the following criteria:

- Sub-cities with over 70% park access (Gulele, Arada, Addis Ketema, Nifas Silk, Kirkos).
- Parks not recently renovated or newly built.
- One city-level and one sub-city-level Park.
- Parks meeting minimum area standards and government-owned.
- Exclusion of theme parks (zoos, botanical gardens).

Bihere Tsige and Hamle 19 Public parks were chosen based on these criteria.

3.3.2 Sample Population and Sample Size

The main objective of this study is to explore the internal and external spatial characteristics of public parks and their influence on utilization based on users' perceptions. Random sampling was used to select individuals, including park visitors, park managers, and employees, to provide necessary information about park spatial characteristics.

To ensure reliable data, representatives were chosen from each park. According to the 1st quarter report of 2023, Bihere Tsige and Hamle 19 Parks receive up to 289 and 78 visitors daily, respectively. Using Yamane's (1967) formula for calculating sample size in a finite population, the total sample size was determined based on the known visitor numbers.

Based on the above sampling technique a total of 168 and 65 visitors were selected and surveyed from BihereTsige and Hamle 19 Public Park respectively. The visitors were surveyed in the public park during weekends and weekdays.

3.3.3 Methods of Data Collection

Primary data was collected through questionnaires, interviews, and field observations, while secondary data was gathered from books, documents, brochures, and websites.

3.3.4 Method of data Analysis

This research uses both qualitative and quantitative data. SPSS is employed to analyze the data, presenting results in percentages, graphs, and charts. Descriptive statistics (percentages and

means) assess user perceptions, while Spearman's rho correlation coefficient examines the relationship between spatial characteristics and park utilization.

Perceptions are measured using a Likert scale, evaluating internal characteristics (adequacy, comfort, cleanliness, visual appeal, accessibility, etc.) and surrounding features (transport routes, access roads, surrounding facilities). Correlation analysis identifies variables with strong or moderate relationships to park utilization, with negatively perceived characteristics contributing to underutilization.

4. Results and Discussion

The assessment focused on users' perceptions of internal and external spatial characteristics of the parks, including adequacy, comfort, cleanliness, visual connectivity, attractiveness, accessibility, and safety. The adequacy was evaluated based on elements like park area, walkways, play facilities, restrooms, parking, and other amenities. The surrounding characteristics, such as surrounding facilities, nearby access roads and public transport, were also assessed in terms of user perception. The study links these perceptions to park utilization to suggest planning improvements.

4.1 Demographic Characteristics

Male visitors dominate both parks, with 72.3% (47 Visitors) in Hamle 19 Park and 62.5% (105 Visitors) in Bihere Tsige Park. This gender imbalance points to potential design issues and the need for more inclusive park features. Young adults (18-30) make up the majority of visitors, indicating that the parks appeal more to this group. The limited presence of older adults suggests the parks might lack amenities for them, such as seating and shaded areas.

The parks are popular with students and employed individuals, indicating their use as spaces for relaxation, study, and socialization during leisure time. Bihere Tsige Park attracts visitors who travel longer distances (over 1 hour), suggesting its status as a city-level park. In contrast, Hamle 19 Park is more local, with a higher percentage of visitors traveling less than 30 minutes, making it a convenient neighborhood park.

4.2 Adequacy of Public Park Features

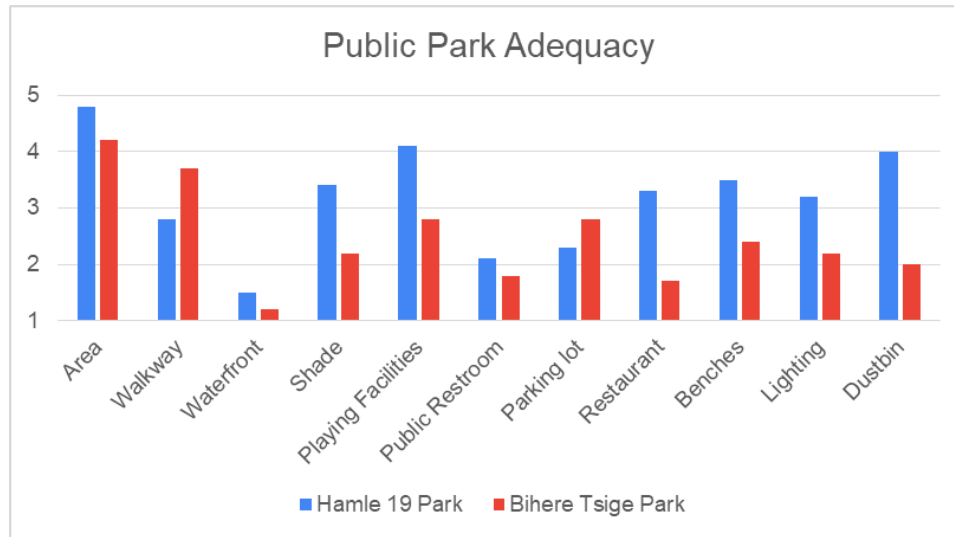


Figure 4.2: Adequacy of Public Park Features

4.2.1 Bihere Tsige Park Evaluation

Area and Walkways are in good condition, providing accessibility and a pleasant environment. In contrast, the playing facility and restaurant are in fair condition—functional but in need of maintenance to enhance safety and usability. However, the waterfront, shade, restrooms, benches, lighting, parking, and dustbins are in poor condition. The waterfront suffers from hygiene issues, while inadequate shade, poor lighting, and deteriorating benches reduce comfort. Additionally, the absence of restrooms and restaurants further diminishes the park's overall appeal.

4.2.2 Hamle 19 Park Evaluation

The area and playing facility are in good condition, providing a pleasant experience for families. In contrast, the walkway, shade, and restaurant are in fair condition walkways require improvement, limited shade affects comfort in extreme weather, and the restaurant needs upgrades. However, the benches, dustbins, waterfront, restrooms, lighting, and parking lot are in poor condition. The waterfront remains unused, and essential facilities such as restrooms and parking are inadequate. Despite this, the park is clean, and the benches are functional, but insufficient lighting reduces its appeal in the evening.

4.3 Internal Spatial Characteristics of Park

4.3.1 Internal Spatial Characteristics of Bihere Tsige Park

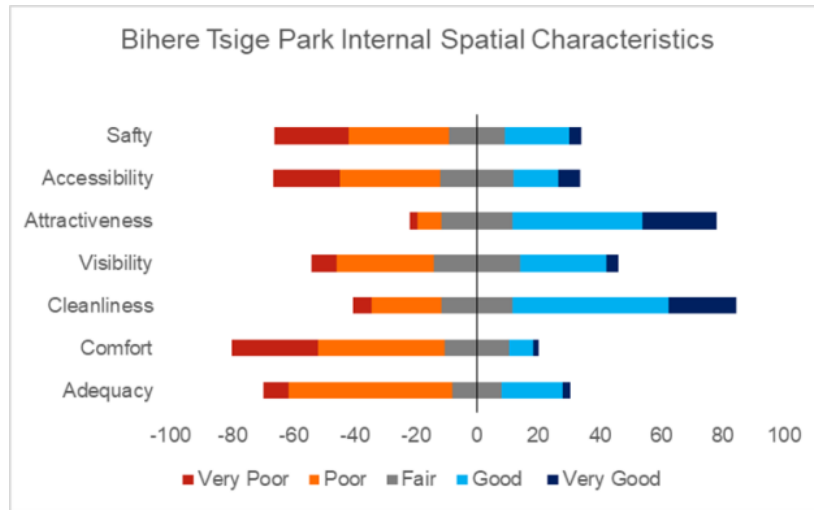


Figure 4.3: Internal Spatial Characteristics of Bihere Tsige Park

Based on the Five-point Likert Scale, the survey reveals that 61.6% of users find the park’s features inadequate, and 69.6% experience discomfort with the facilities, indicating dissatisfaction with infrastructure. While 58.4% rate the park as clean, only 32% are satisfied with visual connectivity, despite the majority finding it attractive. Accessibility (23.6%) and safety (24.8%) receive low ratings, highlighting key barriers to usage. In summary, while cleanliness and attractiveness draw visitors to Bihere Tsige Park, improvements in comfort, adequacy, accessibility, and safety are essential to enhance user satisfaction and inclusivity.

4.3.2 Internal Spatial Characteristics of Hamle 19 Park

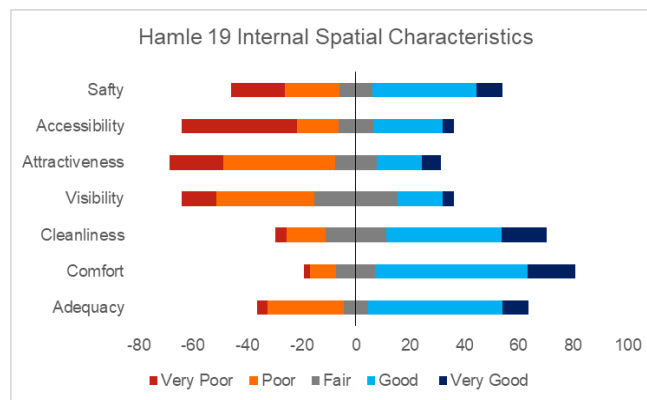


Figure 4.4: Internal Spatial Characteristics of Hamle 19 Park

Hamle 19 Park is rated positively in terms of adequacy (59.2%) and comfort (73.6%), suggesting it meets visitors' needs better than Bihere Tsige Park. Cleanliness is also rated positively by 59%, emphasizing its role in user satisfaction. However, visual connectivity (58.8%) and attractiveness (60.8%) receive low ratings, indicating areas for improvement in the park's spatial organization and aesthetic appeal. Accessibility is another issue, with 57.6% of users finding it difficult to move around, and mixed perceptions of safety suggest further enhancements are needed to make the park more inclusive.

4.4 Surrounding Spatial Characteristics

4.4.1 Surrounding Spatial Characteristics of Bihere Tsige Park

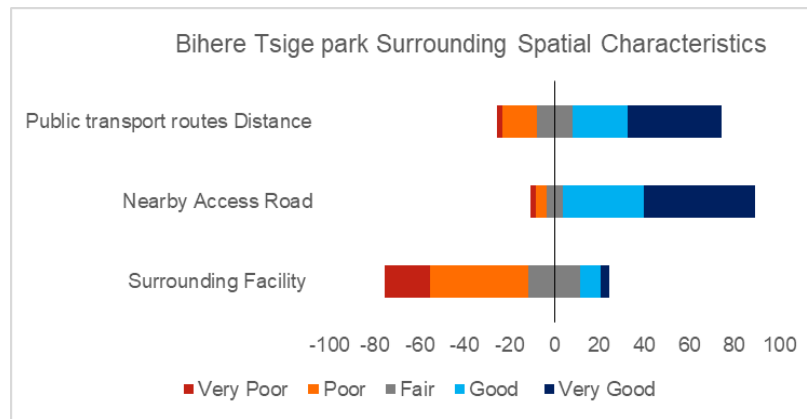


Figure 4.5: Surrounding Spatial Characteristics of Bihere Tsige Park

The surrounding facilities receive mixed reviews, with only 4% rating them as very good, while 44% consider them poor or very poor, indicating a need for better external services to support park activities (Bell et al., 2008). In contrast, the nearby access road is viewed more favorably, with 49.6% rating it as very good, though some respondents (7.2% fair, 4.8% poor, 2.4% very poor) highlight areas for improvement in infrastructure (Sallis et al., 2004). Public transport accessibility is also a concern; while 41.6% rate its proximity positively, 16% consider it fair, and 15.2% find it poor, suggesting that better transport connections could enhance park visitation (Chen et al., 2019).

4.4.2 Surrounding Spatial Characteristics of Hamle 19 Park

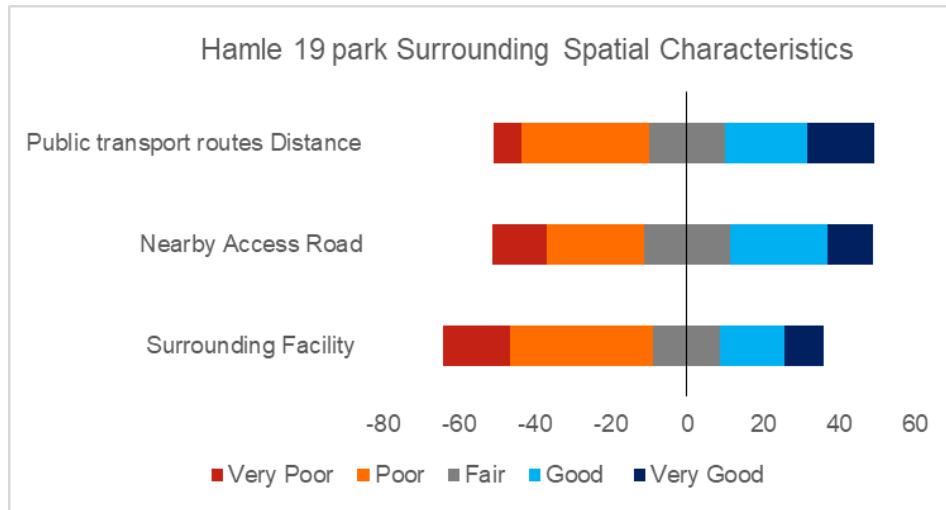


Figure 4.6: Surrounding Spatial Characteristics of Hamle 19 Park

Surrounding facilities receive largely negative feedback, with 37.6% of users rating them poorly and only 16.8% considering them good, highlighting the need for substantial improvements to enhance the park experience (Bell et al., 2008). The nearby access road also presents challenges, as 25.6% of respondents rate it as poor or very poor, despite 12% viewing it positively, indicating a need for infrastructure upgrades (Sallis et al., 2004; Hussain et al., 2010). Additionally, public transport accessibility is a significant concern, with 33.6% of users rating it as poor or very poor, suggesting that inadequate transport connections may discourage visitors, especially those without alternative travel options (Chen et al., 2019). The result indicates both parks face challenges in surrounding infrastructure.

4.5 Correlation between Users' Perceptions and the Utilization of Public parks

Frequency of Visit

32% of visitors to BihereTsigie Park and 40% to Hamle 19 Park visit every weekend, while 58% and 45% visit occasionally. Accessible layouts and recreational spaces contribute to these higher visitation rates, as noted by Jaehyeong Nam & Heungsoon Kim (2014) and Chen et al. (2019). Grahn and Stigsdotter (2005) also find that well-designed parks encourage frequent use, which aligns with the positive influence of both parks' spatial features.

Visiting Duration

84% of visitors to BihereTsigie and 79% to Hamle 19 Park stay for over 1.5 hours. This is likely due to the parks' large size, which encourages longer visits, even without high-quality design or maintenance. Haase et al. (2017) and Fetene &Worku (2013) found similar trends in larger urban parks, where space encourages longer stays, even if amenities are lacking.

4.6 The relationship between users' perceptions and the utilization of public parks

In Bihere Tsigie Park, the study identifies key factors influencing park visitor metrics, categorizing them based on their level of influence. Comfort emerges as the most significant factor, showing a strong correlation with visit frequency and duration of stay, highlighting its crucial role in enhancing the overall experience. Similarly, attractiveness plays a vital role, with visual appeal significantly influencing visitor engagement. Adequacy of facilities also strongly affects visit frequency and duration, though its influence on total visitor numbers is moderate.

Moderately related factors include accessibility, which has a moderate influence on duration and visitor numbers, while cleanliness contributes positively but to a lesser extent. The proximity of public transport routes enhances visitor numbers, reinforcing the importance of connectivity. Additionally, surrounding facilities improve visitor experiences, though their influence is not as pronounced as core factors.

Safety is less influential but still relevant visitor metrics, while visibility plays a minor role, with inconsistent significance. Lastly, nearby access roads have the least impact on visitor numbers and frequency of visit. Overall, the findings emphasize the importance of comfort, attractiveness, and adequacy in attracting and retaining visitors.

4.6.1 Hamle 19 Park correlation coefficient

Attractiveness, Comfort and nearby access road exerts a powerful positive influence on all visitor metrics, including visiting frequency, duration of stay, and the average number of visitors. This highlights its critical role in enhancing the overall visitor experience and boosting park attendance, as supported by the findings of Kaplan & Kaplan (1989) and Cohen et al. (2006).

Accessibility and surrounding facilities demonstrate a moderate influence on visiting frequency and a strong influence on both the duration of stay and the average number of visitors.

Proximity to public transport routes and safety significantly influences the average number of visitors, although it exhibits minimal significant influence on visit frequency and duration of stay. Adequacy shows a low correlation with all visitor metrics, suggesting that its influence on visitor experience is minor compared to other factors.

5. Conclusion and Recommendations

5.1 Conclusion

The study examines the internal and external spatial characteristics of Hamle 19 Park and Bihere Tsige Park, and measure the relation with park utilization based on users' perceptions. The findings indicate factors that has a significant influence on park utilization.

For Bihere Tsige Park, while accessibility, attractiveness, and cleanliness are positively perceived, they do not fully compensate for dissatisfaction with safety, visibility, comfort, and adequacy, particularly for vulnerable groups like female visitors. The surrounding facilities are also rated poorly, indicating a need for improvement. However, public transport access and nearby roads receive positive ratings, suggesting that connectivity is strength.

In contrast, Hamle 19 Park is well-rated in safety, cleanliness, comfort, and adequacy, but users express dissatisfaction with accessibility, attractiveness, and visual connectivity. Additionally, all aspects of its surrounding spatial characteristics—facilities, nearby roads, and public transport access—are perceived negatively, signaling a clear need for enhancements.

The correlation analysis indicates that for Bihere Tsige Park, safety, visibility, comfort, adequacy, and surrounding facilities strongly influence park utilization but are negatively perceived, contributing to underuse. Similarly, for Hamle 19 Park, accessibility, attractiveness, visibility, public transport access, nearby roads, and surrounding facilities are key factors linked to utilization, yet are viewed unfavorably by visitors.

Overall, the study identifies accessibility, attractiveness, visibility, nearby access roads, and surrounding facilities as critical issues for Hamle 19 Park, while safety, visibility, comfort, adequacy, and surrounding facilities are the main concerns for Bihere Tsige Park. Addressing these deficiencies in both internal and external spatial characteristics is essential to improving park utilization, encouraging repeat visits, and enhancing overall visitor experience.

4.2 Recommendation

To improve park utilization and visitor experience, several key enhancements are recommended. Adequacy can be ensured by introducing wide decorative walkways, clean water features, and diverse recreational facilities such as pedal boats and fishing areas. Safety measures, including protective railings and lifebuoys near waterfronts, should be implemented, along with regular maintenance of playgrounds and public restrooms to accommodate all users. Expanding parking areas, adding restaurants and benches, and ensuring adequate lighting and waste disposal will further enhance convenience and accessibility.

Regarding internal spatial characteristics, accessibility can be improved by designing multiple, clearly marked entry points with ramps and wide pathways. Safety should be enhanced through better lighting, fencing, and clear signage. To improve visibility, reducing obstructions around playgrounds and seating areas is essential. Comfort can be increased with shaded seating, while attractiveness can be enhanced by incorporating diverse vegetation, water features, and designated activity areas such as outdoor gyms and performance spaces.

For surrounding spatial characteristics, developing small cafés and kiosks near the park can attract visitors while maintaining ecological balance. Well-maintained access roads with pedestrian crossings and nearby public transport stops will further improve accessibility, ensuring ease of movement for all visitors. Implementing these enhancements will create a more functional, attractive, and inclusive park environment, encouraging greater public engagement.

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