Study of comfort level pedestrian roads in The Historical Area of Peunayong, Banda Aceh, Indonesia

Shynta Raudhah Raziqqah¹, Mirza Irwansyah², Mirza Fuady², Teuku Ivan²
1 Master’s Student Degree Program, Department of Architecture and Planning, Faculty of Engineering, Universitas Syiah Kuala, Darussalam, Banda Aceh 23111, Indonesia
2 Department of Architecture and Planning, Faculty of Engineering, Universitas Syiah Kuala, Darussalam, Banda Aceh 23111, Indonesia

*Email: mirza.hasan@unsyiah.ac.id

Abstract. Peunayong is a trade and service area in Banda Aceh City, Indonesia. In addition, Peunayong is a historical area so that it becomes a tourist area with very busy and varied activities ranging from traveling, shopping, selling, culinary, driving, and other physical activities. Users in this area are also diverse, ranging from residents of the city of Banda Aceh itself to domestic and foreign tourists. These activities require comfortable pedestrian facilities to achieve comfort for tourists and residents. There are several roads, each connecting the regions in the region. Thus, the need for research on the level of pedestrian comfort facilities available, thereby increasing the comfort and it is hoped that the results of this research can contribute to the development of theories for pedestrian design and input for the architectural development of the Peunayong area in the future.

1. Introduction
Every city needs facilities for pedestrians in the form of comfortable pedestrian paths. Pedestrian is a medium that facilitates the circulation of human movement from one place to another on foot. Pedestrian path facilities are expected to increase convenience, safety, and comfort for pedestrians. The city of Banda Aceh, especially district of Peunayong, is an economic center area, a culinary center, and also a tourist center which is crowded with tourists and residents of the city of Banda Aceh. This is because the Peunayong area has many strategic places close to lodging for tourists, such as the typical Aceh souvenir shops center, REX culinary center, Peunayong Traditional Market, Peunayong Chinatown Area, Krueng Aceh Park (Waterfront City Planning), and the Grand Mosque of Baiturrahman is a landmark of Banda Aceh City [1].
One of the problems that arise in the public space of Banda Aceh City is the arrangement of public spaces in the form of the development of pedestrian ways that have not been maximized. The Banda Aceh City Government is planning a policy of Banda Aceh City Qanun (City Local Law) Number 2 of 2018 concerning Amendments to Banda Aceh City Qanun Number 4 of 2009 concerning Banda Aceh City Spatial Planning for 2009-2029 Article 20 concerning Pedestrian Path Development Plans. One of the government's targets is the provision of safe and comfortable pedestrian paths in trade and service areas [2]. According to initial observations on the pedestrian path in the Peunayong area, the path has been laid out in such a way as to provide lighting, trash cans, and vegetation. However, the Peunayong pedestrian route is not yet optimally available. In addition, there is still abuse of the function of the pedestrian path, such as placing merchandise and parking private motorbikes on the pedestrian path, so that the space becomes narrow and uncomfortable for pedestrians to pass. At several points, the condition of the pedestrian path is damaged (broken ceramics), disconnected, there are still no road signs such as zebra crossings and signposts. Pedestrian paths also look unsanitary with the presence of garbage so that it can trigger discomfort for lane users. In addition, facilities for persons with disabilities have not been seen in the area. Therefore, it is necessary to study and rearrange, so that the pedestrian path in the area can provide a comfortable, safe, clean and beautiful feeling for users, especially pedestrians in the area.

2. Materials and methods

According to Creswell, the research method is the design and strategy of data collection, analysis, and interpretation [3]. This study uses a qualitative method with a descriptive approach, namely a way of describing field conditions to accurately reveal various conditions in the field at the time of the research. Sources of data used are primary data and secondary data. The source of data in research is the subject from which the data is obtained. Primary data was obtained from the results of observations and assessments of the condition of the pedestrian path (completeness of facilities and comfort of the path) in the Peunayong area and its surroundings. Data were obtained through several methods, namely observing the condition and feasibility of pedestrian paths, collecting data on the completeness of facilities, as well as measuring and conforming to standards on pedestrian paths in the area. In addition, data were also obtained from the distribution of questionnaires and interviews to determine the public's perception of the comfort level of pedestrian paths in the Peunayong area and its surroundings, with the target being users of pedestrian paths in the area. Meanwhile, secondary data is obtained from Laws, Government Regulations, government programs, history, maps, previous documentation, and so on which is obtained from document review. Data was obtained from several
indirect sources in the form of books, journals, theses, news, and others, where these sources are relevant to research conducted related to the comfort level of pedestrian paths. While the secondary data used is sourced from Literature Studies and related Banda Aceh City Government Agencies.

| Indicator      | Research Variable       | Operational Definition                                                                 |
|----------------|-------------------------|----------------------------------------------------------------------------------------|
| Circulation    | Accessibility           | The pedestrian path connects the Peunayong area and its surroundings.                  |
|                |                         | Availability of facilities for Parents, Pregnant Women, and Persons with Disabilities. |
| Safety         | Safety fence or road divider | Availability of safety fences or road dividers                                         |
|                | Lighting                | Availability of lighting.                                                               |
|                | Surface material        | Availability of types of surface material that is not slippery, absorbs water and does not dazzle pedestrians. |
| Cleanliness    | Trash facilities        | Availability of trash can facilities on pedestrian paths                                |
| The beauty of the pedestrian way | Vegetation          | Availability of vegetation on walking paths.                                           |

(Source: Hakim and Utomo in Anggriani)

This research was conducted on 3 pedestrian paths in the Peunayong area which is divided into 3 corridors, namely Sri Ratu Safiatuddin Street (Corridor 1), Jendral Ahmad Yani Street (Corridor 2), and Khairil Anwar Street (Corridor 3). 3 corridors were chosen as research locations because these 3 corridors are the main pedestrian paths that connect the Peunayong area and its surroundings. Observations were made on weekdays and weekends. The timing of the research is based on the ongoing activities of other non-pedestrians, such as the presence of traders selling and illegal parking activities in the pedestrian area. The time of the study also looked at the peak hours of activity on the pedestrian path and then outside of that hour to see the behavior of pedestrians when doing activities along the area's pedestrian path.

The sampling technique in this study uses Non-Probability Sampling. According to Kuncoro, Non-Probability Sampling is a technique of taking data or samples so that all data may be selected as unequal samples [4]. In this study, the author uses a non-probability sampling technique with the purposive sampling method. According to Sugiyono, purposive sampling is a data sampling technique based on certain considerations and criteria. The main criterion is that the person is a pedestrian on the Peunayong pedestrian path that will be studied [5].
3. Results and discussion

3.1. Research Object Location Analysis

Peunayong is a trade and service area that makes a special place for the people of the city of Banda Aceh to carry out daily activities in the form of buying and selling activities. In addition, Peunayong is also a tourist area and historical area with very busy and varied activities, ranging from sightseeing, shopping, eating and drinking, driving, walking, and other physical activities. Users in this area are also diverse, ranging from local and international tourists. The Peunayong area is one of the urban open space areas where there is a lot of open space around it. Several roads connect between regions in the region, namely Sri Ratu Safiatuddin Street, Jendral A. Yani Street, and Khairil Anwar Street.

3.2. Research result

3.2.1 Pedestrian users

Users on the pedestrian path in the Peunayong area consist of various activities in it, namely pedestrians themselves as the main users of the pedestrian path and also non-pedestrian activities who use the lane to carry out other activities including non-permanent selling places in the form of stand booths/wheelbarrows, places put merchandise, vehicle parking areas, and so on. Based on the age category, pedestrian path users are categorized into five age groups, namely children (age 0-11 years), adolescents (12-25 years), adults (26-45 years), elderly (46-65 years), and seniors 65 years and over.

The gender of corridor pedestrians has different numbers. Corridor 1 Sri Ratu Safiatuddin Street, is dominated by the female gender with a total of 215 pedestrians. In Corridor 2 Jendral Ahmad Yani Street, the male gender is dominated by 279 pedestrians and in Corridor 3 Khairil Anwar Street, the pedestrian path is dominated by the male gender with 135 pedestrians. Of the 3 pedestrian paths that became the research location, the path that is most often traversed is the pedestrian path on Jendral Ahmad Yani Street as shown in the following diagram.
3.2.2 Characteristics of respondents

Table 2. Characteristics of respondents.

| No | Characteristics of Respondents | Category |
|----|--------------------------------|----------|
| 1  | Age                            | Children: 0 People  
                              | Teenagers: 60 People  
                              | Adult: 23 People  
                              | Elderly: 7 People  
                              | Seniors: 0 people  |
| 2  | Gender                         | Male: 31 People  
                              | Female: 59 People  |
| 3  | Domicile                       | Banda Aceh: 87 People  
                              | Outside Banda Aceh: 3 People  |
| 4  | Profession                     | Housewife: 8 people  
                              | Student: 41 People  
                              | Private: 16 People  
                              | Entrepreneur: 13 People  
                              | PNS/TNI/POLRI: 9 people  
                              | Retired/Unemployed: 3 Persons  |

(Source: Primary data processed, 2021)

3.2.3 Pedestrian path user perception results

Overall, of the 90 respondents who participated in the three corridors of the research area, 50 respondents (56%) stated that the pedestrian paths in the Peunayong area were not comfortable walking. Meanwhile, 40 respondents (44%) stated that the pedestrian area in the area was quite comfortable. This assessment is based on experience when accessing pedestrian paths in the Peunayong area per individual respondent as a whole.

Figure 5. Overall pedestrian comfort level rating

(Source: Primary data processed, 2021)

3.2.4 Comfort of the pedestrian path

Following are the results of the questionnaire based on each corridor in the Peunayong area and its surroundings regarding the level of comfort with four aspects of an assessment of circulation, safety, cleanliness, and beauty on the pedestrian path of the Peunayong area. The number of samples for this study was 92 respondents. To produce a proportional answer, the sample of 92 people was divided into 32 respondents for Corridor 1, 32 respondents for Corridor 2, and 30 respondents for Corridor 3. The samples in this study were pedestrians in the Peunayong pedestrian area. Pedestrian path facilities and infrastructure play an important role in supporting the activities of pedestrian path users, so appropriate and supportive facilities and infrastructure are needed for the needs of pedestrian path users in their use. In this study, 4 variables are used as standards to measure the comfort level of pedestrian paths in the Peunayong Banda Aceh area. Variables that are used as a reference in conducting research are based on the theory of Hakim and Utomo in Anggriani namely circulation, security, cleanliness, and beauty [6]. There are 10 questionnaire questions asked by researchers to respondents to obtain information on the convenience of pedestrian paths in the Peunayong area of Banda Aceh. The following are the questionnaire questions asked by the researcher to the respondents:
1. The pedestrian path is easily accessible and connects the Peunayong area and its surroundings (Q1)
2. Merchandise and vehicles on the pedestrian path are very disturbing (Q2)
3. Facilities for Parents, Pregnant Women, and Persons with Disabilities (mark tiles) are available (Q3)
4. Condition of trench cover and floor is good (Q4)
5. It takes a guardrail (curb) as a safety on the pedestrian path (Q5)
6. The condition of the pedestrian path in Peunayong is quite bright and safe at night (Q6)
7. There is a trash can (Q7)
8. The level of cleanliness on the pedestrian path in the Peunayong area is good (Q8)
9. The pedestrian path in the Peunayong area is beautiful and cool (Q9)
10. The atmosphere of the Peunayong area at night is more attractive than during the day (Q10)

Table 3. Result of corridor 1 questionnaire (Sri Ratu Safiatuddin Street).

| Aspects of Pedestrian Assessment | Very Disagree | Disagree | Enough Agree | Agree | Strongly Agree |
|---------------------------------|--------------|---------|-------------|-------|---------------|
| **SIRCULATION**                 |              |         |             |       |               |
| The pedestrian path is easily accessible and connects the Peunayong area and its surroundings (Q1) | 3% | 19% | 45% | 26% | 7% |
| Merchandise and Vehicles on the pedestrian path are very annoying (Q2) | 10% | 23% | 22% | 32% | 10% |
| Facilities for Parents, Pregnant Women, and Persons with Disabilities (marking tiles) are already available (Q3) | 10% | 42% | 42% | 3% | 3% |
| **SAFETY**                      |              |         |             |       |               |
| Good condition of trench cover and floor (Q4) | 0% | 39% | 48% | 10% | 3% |
| It takes a guardrail (kerb) as a safety on the pedestrian path (Q5) | 0% | 9% | 39% | 39% | 13% |
| The condition of the pedestrian path in Peunayong is quite bright and safe at night (Q6) | 0% | 29% | 45% | 26% | 0% |
| **CLEANLINESS**                 |              |         |             |       |               |
| Available trash can (Q7) | 0% | 32% | 42% | 23% | 3% |
| The level of cleanliness on the pedestrian path in the Peunayong area is good (Q8) | 3% | 40% | 47% | 10% | 0% |
| **THE BEAUTY OF THE PEDESTRIAN WAY** |              |         |             |       |               |
| The pedestrian path in the Peunayong area is beautiful and cool (Q9) | 3% | 36% | 52% | 6% | 3% |
| The atmosphere of the Peunayong area at night is more attractive than during the day (Q10) | 6% | 10% | 32% | 39% | 13% |

(Source: Primary data processed, 2021)

Table 4. Result of Corridor 2 questionnaire (Jendral Ahmad Yani Street).

| Aspects of Pedestrian Assessment | Very Disagree | Disagree | Enough Agree | Agree | Strongly Agree |
|---------------------------------|--------------|---------|-------------|-------|---------------|
| **SIRCULATION**                 |              |         |             |       |               |
| The pedestrian path is easily accessible and connects the Peunayong area and its surroundings (Q1) | 0% | 21% | 47% | 30% | 3% |
| Merchandise and Vehicles on the pedestrian path are very annoying (Q2) | 3% | 10% | 36% | 35% | 16% |
| Facilities for Parents, Pregnant Women, and Persons with Disabilities (marking tiles) are already available (Q3) | 13% | 48% | 32% | 7% | 0% |
| **SAFETY**                      |              |         |             |       |               |
| Good condition of trench cover and floor (Q4) | 3% | 32% | 42% | 20% | 3% |
| It takes a guardrail (kerb) as a safety on the | 3% | 16% | 10% | 48% | 23% |
pedestrian path (Q5)  
The condition of the pedestrian path in Peunayong is quite bright and safe at night (Q6)  

|                | Very Agree | Disagree | Enough Agree | Agree | Strongly Agree |
|----------------|------------|----------|--------------|-------|----------------|
| CLEANLINESS    | 7%         | 19%      | 36%          | 32%   | 6%             |
| Available trash can (Q7) | 0%        | 32%      | 42%          | 23%   | 3%             |
| The level of cleanliness on the pedestrian path in the Peunayong area is good (Q8) | 6% | 36% | 36% | 19% | 3% |
| THE BEAUTY OF THE PEDESTRIAN WAY |          |          |              |       |                |
| The pedestrian path in the Peunayong area is beautiful and cool (Q9) | 13% | 20% | 45% | 19% | 3% |
| The atmosphere of the Peunayong area at night is more attractive than during the day (Q10) | 9% | 10% | 29% | 39% | 13% |

(Source: Primary data processed, 2021)

Table 5. Result of corridor 3 questionnaire (Khairil Anwar Street).

| Aspects of Pedestrian Assessment | Very Disagree | Disagree | Enough Agree | Agree | Strongly Agree |
|----------------------------------|---------------|----------|--------------|-------|----------------|
| SIRCULATION                      |               |          |              |       |                |
| The pedestrian path is easily accessible and connects the Peunayong area and its surroundings (Q1) | 0% | 27% | 47% | 23% | 3% |
| Merchandise and Vehicles on the pedestrian path are very annoying (Q2) | 10% | 19% | 32% | 26% | 13% |
| Facilities for Parents, Pregnant Women, and Persons with Disabilities (marking tiles) are already available (Q3) | 20% | 40% | 38% | 0%  | 3%  |
| SAFETY                           |               |          |              |       |                |
| Good condition of trench cover and floor (Q4) | 7% | 45% | 26% | 16% | 6% |
| It takes a guardrail (kerb) as a safety on the pedestrian path (Q5) | 13% | 30% | 44% | 13% | 0% |
| The condition of the pedestrian path in Peunayong is quite bright and safe at night (Q6) | 3% | 14% | 60% | 20% | 3% |
| CLEANLINESS                      |               |          |              |       |                |
| Available trash can (Q7) | 0% | 40% | 30% | 27% | 3% |
| The level of cleanliness on the pedestrian path in the Peunayong area is good (Q8) | 0% | 50% | 40% | 7% | 3% |
| THE BEAUTY OF THE PEDESTRIAN WAY |          |          |              |       |                |
| The pedestrian path in the Peunayong area is beautiful and cool (Q9) | 0% | 59% | 27% | 14% | 0% |
| The atmosphere of the Peunayong area at night is more attractive than during the day (Q10) | 0% | 23% | 34% | 33% | 10% |

(Source: Primary data processed, 2021)

Based on the results of the questionnaire obtained from respondents regarding the convenience of circulation on the pedestrian path in each corridor, it can be said that: In corridor 1, respondents dominantly chose 3 numbers (quite agree) for Q1 as much as 47%. For Q2 respondents answered number 4 (agree) with a total of 135%. For Q3 the dominant respondent answered number 2 (disagree) as much as 48%. In Corridor 2 for Q1, 45% of respondents answered number 3 (quite agree). While Q2 32% of respondents answered number 4 (agree). For Q3 42% of respondents answered number 2 (disagree). In Corridor 3 for Q1, 47% of respondents answered number 3 (quite agree). For Q2 32% of respondents answered number 3 (quite agree). For Q3 40% of respondents answered number 2 (disagree). Based on the questionnaires obtained from respondents regarding safety on pedestrian paths in each corridor, it can be found that: In corridors, 1 to Q4 42% of respondents answered number 3 (quite agree). While Q5 48% of respondents answered number 4 (agree). For Q6 36% of
respondents answered number 3 (quite agree). In Corridor 2 for Q4, 48% of respondents answered number 3 (quite agree). While Q5 39% of respondents answered number 3 (quite agree) and number 4 (agree). For Q6 45% of respondents answered number 3 (quite agree). In Corridor 3 for Q4, the dominant respondent answered number 2 (disagree) as much as 45%. While Q5 44% of respondents answered number 3 (quite agree). For Q6 60% of respondents answered number 3 (quite agree). Based on the questionnaires obtained from respondents regarding the cleanliness of the pedestrian paths in each corridor, it can be found that: In corridor 1 for Q7 42% of respondents answered number 3 (quite agree). Q8, 42% of respondents answered number 3 (quite agree). In Corridor 2 for Q7, 42% of respondents answered number 3 (quite agree). While Q8 47% of respondents answered number 3 (quite agree). In Corridor 3 to Q7, 40% of respondents answered number 2 (disagree). While Q8 50% of respondents answered number 2 (disagree). Based on the questionnaire obtained from respondents regarding the beauty of the pedestrian path in each corridor, it can be obtained that: In corridor 1 for Q9 45% of respondents answered number 3 (quite agree). While Q10 39% of respondents answered number 4 (agree). In Corridor 2 for Q9, 52% of respondents answered number 3 (quite agree). While Q10 39% of respondents answered number 4 (agree). In Corridor 3 for Q9, 40% of respondents answered number 2 (disagree), while Q10 34% of respondents dominantly chose to answer number 3 (quite agree).

4. Conclusions
   Based on the results of data analysis in research studies about the comfort level of pedestrian paths in the Peunayong area, it can be concluded some conclusions as follows:
1. The availability of pedestrian paths in the Peunayong area is already available, but it is not evenly distributed. Pedestrian paths that have not been spread evenly are in corridor 3 (Kharil Anwar Street).
2. For pedestrian lane accessibility, lane users can still reach it even though at some points the physical condition of the pedestrian path has changed its function. Especially in corridor 2, Jalan Jenderal Ahmad Yani at night the pedestrian path is converted to function as a medium for culinary traders. So that makes this area more attractive at night.
3. The condition of the pedestrian path in the Peunayong area that is available is not in accordance with existing standards. In this study, researchers took the standard based on the SE Minister of PUPR No. 02/SE/M/2018.
4. Circulation on pedestrian paths in corridors 1, 2 and 3 is quite comfortable, but there are still merchandise and illegal parking which make pedestrian paths uncomfortable. Lack of street furniture such as lights, plants, trash cans and seats.

References
[1] Menteri. 2014. Peraturan Menteri Pekerjaan Umum Nomor 03/PRT/M/2014 tentang Pedoman Perencanaan, Penyediaan dan Pemanfaatan Prasarana dan Sarana Jaringan Pejalan Kaki. Jakarta: Direktorat Jenderal Penataan Ruang Departemen Pekerjaan Umum.
[2] B1,13anda Aceh City Government. 2009. Qanun Kota Banda Aceh Nomor 4 Tahun 2009 tentang Rencana Tata Ruang Wilayah Kota Banda Aceh Tahun 2009-2029. Banda Aceh.
[3] J. W. Cresweel. 2009. Research Desain. Singapore: SAGE Publications.
[4] Kuncoro and Mudrajad. 2009. Metode Riset untuk Bisnis dan Ekonomi. Edisi 3, Jakarta: Erlangga.
[5] Sugiono. 2009. Metode Penelitian Kualitatif, Kuantitatif dan R&D. Bandung: Alfabeta
[6] Rustam Hakim and Hardi Utomo. 2003. Komponen Perancangan Arsitektur Lansekap, Jakarta: Bumi Aksara.