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TOD Tourism Heritage District Livability: User Satisfaction in Kali Besar Corridor in Jakarta, Indonesia.

Bramanti Kusuma Nagari¹, Sri Suryani², Wiwik Dwi Pratiwi³

^{1,3}School of Architecture, Planning and Policy Development, Institut Teknologi Bandung, INDONESIA

²Doctoral Student, Department of Urban Studies and Planning, University of Sheffield, UNITED KINGDOM

¹bram.kn@gmail.com

Abstract. Kota Tua is one of the most popular Transit-Oriented Development heritage areas in Jakarta. Kali Besar Corridor, as part of Kota Tua, was revitalized to improve the visitors' experiences. Due to its proximity to other historical sites, Jakarta Kota station, and availability of *Transjakarta* bus stops, tourist and visitors expect easy access. However, some buildings are unoccupied and slowly deteriorated, despite the possibility to enhance its functionality. Accordingly, this paper examines to what extent Kali Besar Revitalisation Project meets the visitors' and tourists' cumulative satisfaction regarding connectivity and accessibility aspects, for possibility in future intensification in this area. It takes mixed methods between qualitative and quantitative methods, including direct observation and online surveys. The results suggest that 57 percent of visitors were commuting by public transport, and 66 percent pleased by the accessibility of public transport. Despite this moderate satisfaction rate of passengers in public transport services for accessibility and interconnection between public transport hub with pedestrian ways and tourist spots along the Kali Besar corridor, the simple cross-tabulation analysis concluded that respondents' satisfaction has less impact in their future visit on loyalty. In conclusion, the connectivity and accessibility factors along the Kali Besar Corridor and its nearby area are supporting the idea of TOD and opening the potential sustainable urban development in the future, especially in the tourism heritage area. However, some improvements need to be done to ensure the basic aspects of pedestrian ways, such as safety, security, and comfort level of visitors are well-achieved.

1. Introduction

Kali Besar corridor, which located inside the Kota Tua Area, North Jakarta, Indonesia, has a remarkable history for Indonesia. Initially, Jakarta (also known as Batavia) northern area was a business district for *Vereenigde Oostindische Compagnie* (VOC) or the Dutch East Indies in the 16th century, as supporting infrastructures for trading and service activities in Sunda Kelapa port, the former main port in Jakarta (previously Batavia). The corridor has a distinctive character of Dutch colonial architecture and canal, with a little mixture of English colonial architecture. Nowadays, Kali Besar and its surroundings have been revitalized, and with its uniqueness and distinctive features, it has plausibility to be developed and adapted as a sustainable business area, while at the same time could be maintained as a cultural attraction for visitors.



The connectivity in the Kota Tua area was developed approximately in the late 19-century, after the establishment of the first train station in Jakarta, which was Batavia Noord, by Nederland Indische Spoorweg Maatschappij or Dutch-East Indie Railway Company. Later, Batavia Zuid or South Batavia Station was constructed in 1870, as a part of Batavia – Buitenzorg line (nowadays Jakarta – Bogor city), and finished on 19 August 1929. In 1913, the ownership of Batavia – Buitenzorg line shifted to Staat Spoorwegen, the state-owned railway company of the Netherland [24]. The electrification of the rail system happened from 1923 to 1930 in Batavia – Buitenzorg line.

However, after the independence day of Indonesia, former President of Indonesia decided to cut the railway service, including electric train and trams in the 1960s, due to the traffic congestion that caused by the train operational, and fewer passengers because of the deteriorated trains. In 1976, Japan – Indonesia cooperation resulted in the revivification of train services, comprising the procurement of new train cars [25]. Additionally, the inauguration of the Transjakarta Bus Rapid Transit system in 2004 as the solution to reduce the traffic congestion in Jakarta had supplemented the function of the commuting life for Jakarta residents, especially connecting the north area of Jakarta to central business district [26]. These developments somehow shape the dynamic life of Kota Tua, and Kali Besar Corridor as well.

In this regard, Kali Besar area has several advantages to be managed as heritage Transit-Oriented Development area, because the urban precinct provides numerous connectivity and accessibility for the visitors, such as the location is approximately in walking distance, 200 meters, from Jakarta Kota station, and it has its bus stop at the very front. Nonetheless, to what extent the visitors perceived the transit connectivity and accessibility (including walkability) in Kali Besar Area, after the revitalization finished in 2018 and how it might affect the willingness to revisit the Kali Besar in the future?

2. Transit-Oriented Development and Tourism Heritage District

Developing countries, who are currently embracing economic rising and foreign investments, tend to have more road and highway construction, which leads to more dependencies on private motorized vehicles [1]. However, Transit-Oriented Development (TOD) concept is nowadays widely accepted in the development urbanized area; it efficiently integrates the land use planning and transportation systems [2] with its eight aspects; Connect, Compact, Transit, Densify, Shift, Mix, Cycle, and Walk [3]. It also supports the notion of accessibility and inclusivity in the city, pro-poor positively ensure the security of its citizen to walk and cycle, reliable public transport, less traffic, and affordable moving for all [1].

One of the most important parts of the TOD concept is accessibility and connectivity aspects since the residents need to travel here and there for many occasions. Mafame [4] states that the implementation of the TOD concept might enhance the equal accessibility in urban development, through lesser travel time [5] increasing the usability of public transportation [6] and rising the expansion and better quality of non-motorized transportation facilities [7]. As one of the support system for urban sustainability, TOD could help to densify land development and prevent sprawl land-use planning; strengthen the economic activities, through productivity in the utilization of public transport and high-density land-use; and improve the residents' life quality [27].

2.1. The importance of User Satisfaction in Accessibility and Connectivity

Litman [8], in Ratner and Goetz [9], defines accessibility as physical features that support mobility for services, activities, goods, and place. It ranges from the availability of adequate facilities for walking to the provision of transportation modes. Additionally, those features should be connected, as stated in Canepa [10] that the optimization of transit development is affected by multimode connectivity, which helps the users to access their destination with ease.

Customer satisfaction describes as an evident evaluation based on customers' perspective after experiencing certain services and products [11]. Furthermore, a study by Johnson, et al. [12] describes two concepts of customer satisfaction, which consists of a) transaction-specific satisfaction, stressing the individual satisfaction; and b) cumulative satisfaction, which represents the overall consumer satisfaction and Chang and Chang [13] reflect that overall satisfaction might directly affect the loyalty of customers, or in this case visitors. This study purposively employed the cumulative satisfaction

concept, which helps the analysis based on survey results and understands the sustainability of urban connectivity and accessibility in the Kali Besar Corridor.

2.2. Connectivity and Accessibility in Revitalized Kali Besar Corridor, Kota Tua, Jakarta, Indonesia

Heritage conservation also has several benefits; it helps the city to maintain its strong identity and more livable space for the native community [14]. A Study from Renne and Listokin [15] emphasizes the potential of TOD concept and heritage preservation since usually, the old buildings are the main attraction of the city and sometimes it becomes city's assets and tourism destination, it possible when a restored historical building might attract the potential investor and users to adopt the new function inside the old buildings. While the area is widely known among the visitors as a distinctive area to visit, the other factors that influence sustainability are easiness in accessibility near the area.

Similarly, buildings along Kali Besar are intentionally preserved and later adapted into numerous functions, such as rental office, museum, shop, and accommodation for visitors [16]. Based on Local Regulation of DKI Jakarta no. 9 year 1999 [17], Kali Besar Area listed in the second class of cultural heritage in Jakarta, in which restricting the current owners to change the buildings' appearance to maintain the authenticity, and at the same time, the owners might adopt the new functions [17].

2.3. Area of Study

Kali Besar is situated in the northern part of Jakarta, sub-district of Taman Sari, West Jakarta. As a part of Kota Tua, the area and the buildings are part of the Jakarta Cultural Heritage that listed in Peraturan Daerah DKI Jakarta (Local Decree of DKI Jakarta) number 9, the year 1999. Here stated the Kali Besar area is categorized in Class B, which means that the building might be adapted for the new functions, though the building demolishing and hard renovation area prohibited. The delineation of the area study is presented in Figure 1.



Figure 1 Maps of Study (Adapted from Google Maps (2019))

2.3.1. Heritage Transit-Oriented Development in Kali Besar Area. Kali Besar Area, which is a part of Kota Tua Cultural Heritage, is located within walking distance with BRT (*Transjakarta*) bus stop and Jakarta Kota Station. During VOC's occupation in the 17th century, Sunda Kelapa Port in Batavia (nowadays known as Jakarta) was the principal access for economic activities, such as business and trading [18]. It could be seen that VOC also developed the city infrastructure to effectively manage those activities, for instance, Station Jakarta Kota and train system.

Before the revitalization of Kali Besar and Kota Tua executed in the year 2018, the canals, pedestrian facilities, and buildings were deteriorating due to the lack of maintenance from the local government, despite the place is appointed as Province's Cultural Heritage. Some of the visitors unable to enjoy as the area was fulfilled with scavengers and informal sellers. In 2018, Jakarta Provincial Government was inspired by the revitalization of the Cheonggyecheon River in Seoul, South Korea, and managed to revitalized and open for the public in the middle of 2014.

Around 78.000 people visited the Station Jakarta Kota daily in 2018 and could be increased up to 186.000 people on holiday, such as Idul Fitri and New Year [19]. Similarly, there are three available *Transjakarta* bus stops, which Jakarta Kota bus stop serving Corridor 1 (Blok M – Kota), Corridor 5K (Kampung Melayu – Kota), Corridor 12A (Penjaringan – Kelapa Gading); while Kali Besar bus stops and Museum Fatahillah Bus Stop are only served through Corridor 12 (Penjaringan – Tanjung Priok). The number of daily passengers for Corridor 1 approximately rising to 89.000 passengers, especially after the inauguration of Mass Rapid Transit (MRT) Jakarta in early 2019 (Pos Kota News, 2019). However, there is no available data for other corridors. Overall, the daily visitors of Kota Tua are ranging from 4.820 people in weekdays in the year 2017 [19] and might be enlarged up to 50.000 in public holiday season [20].

3. Research Method

In this research, user experiences of Kali Besar's accessibility and connectivity were examined through the mixed method, with quantitative and qualitative analysis combined. This method helps the researchers, practitioners, policymakers in identifying the important problems that occur, presenting the relevant evidences from the observation, and supplementing the analysis with some adequate performance to compensate for the insufficient results of research [21]. In this article, we want to describe the satisfaction level of visitors in Kali Besar Area, in terms of connectivity and accessibility. Accessibility refers to the easiness to enter and approach the area, while connectivity refers to user experience in various transportation modes. The questionnaire was spread through an online platform, consisted of the basic question about the access to the Kali Besar Area, perceived pleasure of pedestrian ways, reachability of Kali Besar area from public transport nearest stops, ease in found parking area and dropping off the passengers, overall satisfaction, and revisit the place in the future.

Particular targets were the visitors of Kali Besar after the revitalization finished in May 2018. In total, the number of respondents was 119, however, 14 respondents were answering "had not visited Kali Besar/had visited Kali Besar before May 2018", and so it is excluded for data analysis. Data collection was obtained in two periods; the first period of data collection was sharing the questionnaire link to anyone using random sampling, since April 12, 2019, until April 28, 2019 (17 days). However, due to the insufficient number of respondents, authors were extending the data collection through purposive sampling, and aim the respondents through Instagram application, who tagged themselves in the Kali Besar area. The data reached the target 17 days later, between April 29, 2019, until May 15, 2019.

In able to find the relationship between overall satisfaction of visitors in connectivity and accessibility with loyalty (here stated as revisited aspect), a simple cross-tabulation analysis was employed, to understand the significant influence of user perception in willingness to pay a visit to the place in the future. Hopefully, this analysis could support the argument about the advantage of connectivity and accessibility in Kali Besar in supporting the heritage TOD area for both cultural tourism and business purposes. After obtaining data through questionnaires and primary observation in Kali

Besar, several data are presenting in this section. This section divides into three parts, and each describes the finding both from observation and an online questionnaire.

4. Findings and Discussion

Nowadays, the area provides a wide pedestrian way, with completed street furniture, such as permanent chairs, sculptures, and targeting millennials users with “Instagrammable” surroundings. With the aspects that adapted from the TOD concept; Connect, Transit, Shift, Walk; Figure 6 describes the walkable street available that surrounding Kali Besar and Kota Tua precinct. Additionally, the primary observation of several spots gave us information and evidence about the connectivity and accessibility of this study.



Figure 2. Observation spots of accessibility and connectivity around the study area

Table 1. Documentation of accessibility and connectivity around study area

Spot No.	Documentation	Notes
1		<p>1. Transjakarta Bus Stops – Kota</p> <p>The <i>Transjakarta</i> Bus stop is linked with Stasiun Kota and front part of Mandiri Museum (one of the buildings in Kota Tua area) and Station Jakarta Kota via an underpass.</p>

2



2. Station Jakarta Kota

The station is functioned as Terminus; so this station becomes the final destination for some of the North Jakarta/West Jakarta residents.

3



3. Jalan Pintu Besar Utara (Pintu Besar Utara Street)

the road located on the north side of Kali Besar is currently divided into two areas, Car-free area; and car-allowed area.

4



4. Jalan Kali Besar Timur (Kali Besar Timur Street)

On the weekend/public holiday, pedestrian way also crowded by informal street vendors. This spot is the entrance to Kota Tua and Kali Besar area from Pintu Besar Utara Street.

5



5. Lada Street

One of the preferred street to access Kota Tua from Station Jakarta Kota. However, the pedestrian way is fulfilled with informal sellers, especially on weekends/public holidays. there are shops and commercial along the street.

6



6. Fatahillah Park






Fatahillah Park is the entrance to Kota Tua from Lada Street. No car allowed, only pedestrians and bicycles.

7



7. Kali Besar Transjakarta Bus Stop

The bus stop located in Kali Besar Barat Street, very close to the Kali Besar area and Jembatan Merah (Red Bridge), which connects the Kali Besar area with the entrance of Kota Tua from Kali Besar Timur Street.

8		<p>8. Kunir Street, bridge part.</p> <p>The bridge that cutting across the Kali Besar Barat Street and Kali Besar Timur Street. The pedestrian way accessibility is affected by reconstruction work in Segment B revitalization.</p>
9		<p>9. Fatahillah Transjakarta Bus Stop</p> <p>The bus stop located in Kunir Street, next to Kali Besar Timur Street. It has decent facilities for the pedestrians.</p>
10		<p>10. Jalan Kali Besar Timur (Kali Besar Timur Street)</p> <p>This spot is located near Jalan Kunir. Here is an available parking area, and visitors could directly enjoy Kali Besar Area.</p>
11		<p>11. Jalan Kali Besar Barat (Kali Besar Barat Street)</p> <p>Located in Segment B, which currently in the reconstruction period. However, the pedestrian way is not equipped with tactile paving.</p>
12		<p>12. Jembatan Kota Intan (Kota Intan Bridge)</p> <p>Kota Intan bridge is known as one of the oldest bascule bridges in Indonesia and assigned as one of the cultural heritage by The Government of DKI Jakarta Province. Currently under construction together with segment B, and could not utilize as crossing bridge. However, some officers guard the place and could become a guide with a considerable amount of tipping fees.</p>

Notes. Source: Primary Observation (2019) and Google Street View (2019)

From Table 1, even after the revitalization, not all the accessibility and connectivity to Kali Besar had to be improved. Our observation figured that even the facilities nearby Kali Besar are equipped with

inclusivity standards, for instance, tactile paving and ramps, for public transport users, especially people with disability (blind and armchair) might not able to travel here alone, due to the lack of proper features that build linking Station Jakarta Kota and Kali Besar. Even when *Transjakarta* Bust Stops provide ramps, the pedestrian ways have no proper connection to the study area. Even Station Jakarta Kota, which supposed to be the main access to this area, has unsafe connectivity for disable. Even there is no signage for the public audience to reach the area easily without maps/digital maps.

4.1. User Satisfaction regarding Accessibility and Connectivity in Kali Besar Corridor

Based on the demographic background, among 105 respondents, 54 percent are women, while other 46 percent are men. The age of respondents is dominated by 20 – 29 years old and around 30 – 39 years old with 72 percent, 15 percent, respectively. These results might suggest that the most common visitors are middle-class millennials in their productive age, with 41 percent respondents’ monthly salary is between five million Rupiahs to 14,9 million Rupiahs (equivalent to USD357 to USD1068) and 34 percent other has one million to 4,9 million rupiah (equivalent to USD71 to USD356).

The survey results show that 57 percent of the respondents went to the site via public transport, 23 percent using private vehicles and 11 percent preferred online taxi or motorcycle, respectively, and verify the ability of public transport to support “shift” in Kali Besar Heritage TOD. Within 57 percent of public transports users, 66 percent feel satisfied with the accessibility (see Figure 2). Furthermore, in Figure 3, 87 percent respondent considers the pedestrian area nearby Kali Besar has comfortable accessibility, hence overall the findings show that 94 percent of visitors perceived that the place has decent accessibility.

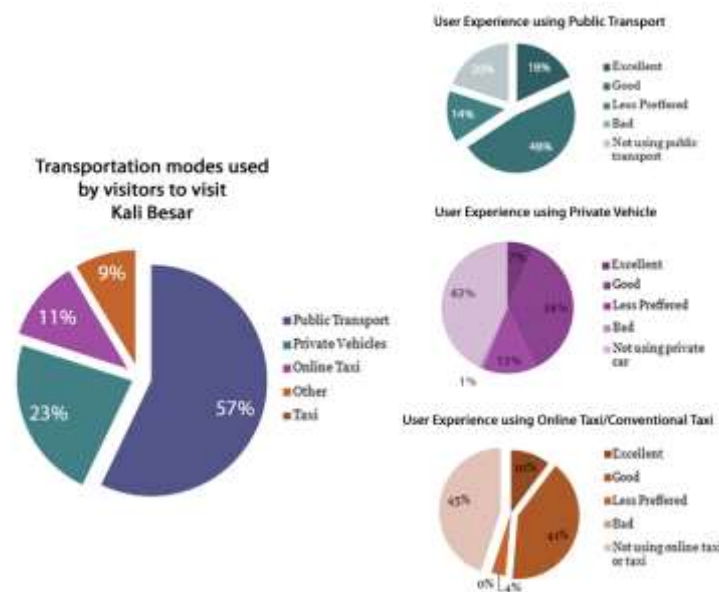


Figure 3. User satisfaction regarding accessibility in Kali Besar Corridor

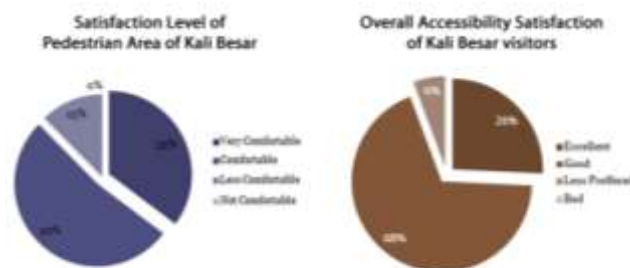


Figure 4. Level of User Satisfaction and Overall Accessibility satisfaction of Kali Besar Visitor

Despite some uncomfortable and insufficient facilities that describe in Table 1, 88 percent of visitors will encourage their colleagues to visit Kali Besar and 75 percent also will reexplore the place again in the future, respectively (see Figure 4). Since the common audiences regard their satisfaction with accessibility and connectivity, it might be perceived that both aspects of mobility in Kali Besar and its surroundings adequate in supporting the movement.

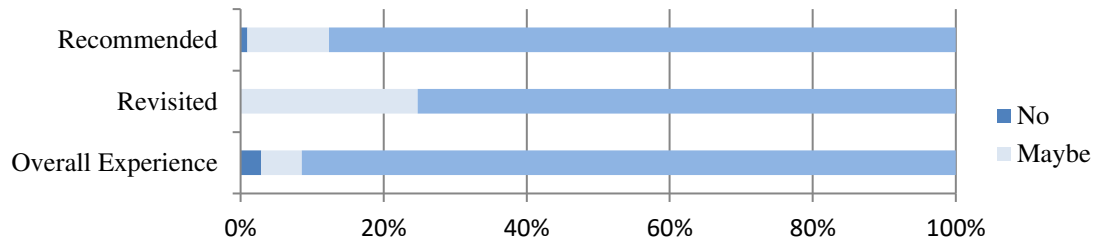


Figure 5. Overall experience, Recommendation, and loyalty of Kali Besar visitors

Table 2 Cross Tabulation between Satisfaction of Overall Access and Revisited (Loyalty)

Count of Overall Access	Revisited			Grand Total
	Yes	Maybe	No	
Overall Access				
1 (not satisfied)	0	0	0	0
2 (less satisfied)	6	0	0	6
3 (satisfied)	50	22	0	72
4 (very satisfied)	23	4	0	27
Grand Total	79	26	0	105

Note. X^2 : 4.7059, with *P-significance*: 0.095, *Cramer's V*: 0.2117

Despite the considerable perceived satisfaction from the respondent, simple cross-tabulation analysis proves otherwise; Table 2 shows that the satisfaction level of the user has insignificant influences to the revisited aspect (loyalty), with low values of X^2 (Goodman and Kruskal, 1979) and *P-significance* > 0.05, means that the significance level supports the null hypothesis (no correlation between two variables). However, another measurement, which defines through Cramer's V value, indicates there is a moderate relationship between both variables, with Cramer's V = 0.2117. Cramer's V generally preferred to measure the X^2 table with more than 2x2 table tabulation, with a value close to 0 denotes the weak relationship [22] [23]. Regarding these statistical analyses, in this case, we assume that the correlation between cumulative satisfaction of connectivity and accessibility has a dilute impact on loyalty to visit the Kali Besar Area.

Several assumptions have been developed to explain such results. Firstly, as explained in the research method that we obtained the data from Instagram users with middle-class income as the most frequent respondents. It might impact the final findings, as there are plenty of options for accessibility to the place. Besides, most respondents regard their visit as pleasure purpose, with the least answers for working purpose, as expected from heritage destination (see Figure 5). Additionally, there are indications that visitors mostly enjoy the place as tourism spots, which specifies in Figure 6, with visual and movement experiences are becoming two most answered factors in Kali Besar corridors.

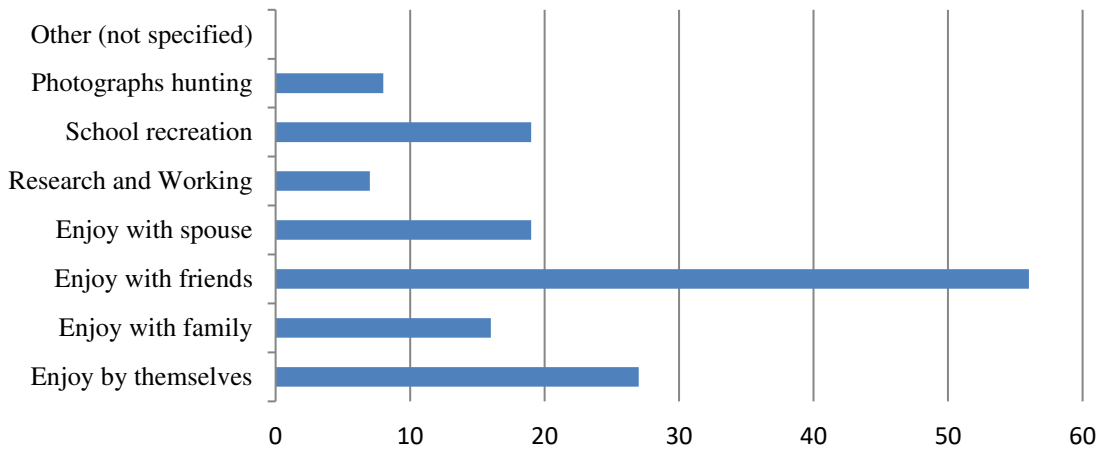


Figure 6 Purposes of visiting Kali Besar

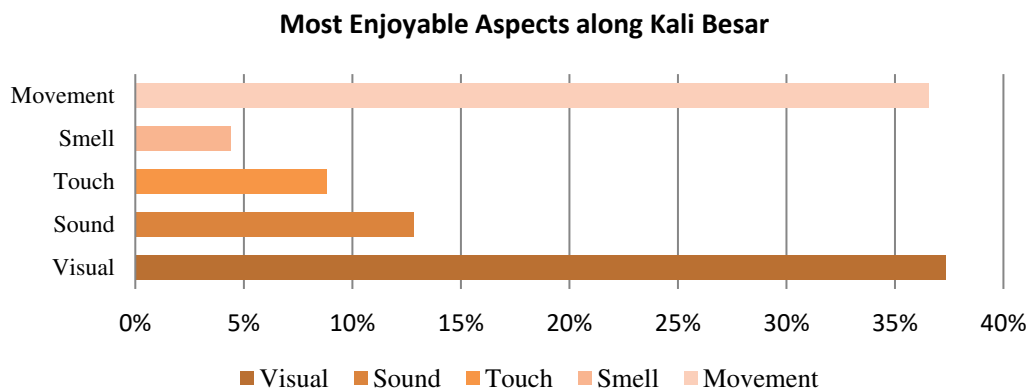


Figure 7 Observation Most enjoyable variables of Kali Besar Visitor

In summary, the visitor’s opinions reveal that connectivity and accessibility in Kali Besar reported as adequate, based on the common perception from users’ point of view. Thus, our observation is also presenting the evidence of decent connectivity and accessibility in Kali Besar corridors and its neighborhood. Nonetheless, the cross-tabulation comprehends that overall satisfaction has no strong impact on loyalty of future visit, based on simple correlation analysis. However, further research might be helpful to figure which aspects have a stronger impact on loyalty to visit Kali Besar, since the place more likely visited as a tourism spot with beautiful visual.

Additionally, there are several important notes in walking facilities, such as the unavailability of signage and zebra cross for pedestrians, which consequently confusing some of the tourists who reach the destinations from Jakarta Kota station; beside the huge amount of street vendors who block the walking space along with the pedestrian ways.

5. Conclusion

Kali Besar has a long history as heritage transit-oriented development in Jakarta city, as the neighborhood equipped with wide options of transportation and strategic land-use, and today it recognizes as second-class heritage area by Jakarta local government, with the huge number of visitors, comes to enjoy the historical vibes. However, we also saw another chance of the successful future TOD in Kali Besar, since numerous buildings are unoccupied and deteriorated, while it could be utilized as many purposes and be maintained. For these reasons, our research objective is digging up several possibilities to engage future investment in this area from accessibility and connectivity point of view, especially from the visitor, with their respective background.

The survey was conducted through an online survey with valid 105 respondents. The results show that 57 percent of the respondents went to the site via public transport, 23 percent using private vehicles and 11 percent preferred online taxi or motorcycle and verify the ability of public transport to support “shift” in TOD. Among 57 percent public transports users, 66 percents feel satisfied with the accessibility, since Kali Besar is located within walking distance with BRT (*Transjakarta*) bus stop and Jakarta Kota Station. Overall, 94 percent of visitors thought that the place has decent accessibility, while 75 percent of respondents interested in revisiting the place in the future.

Nonetheless, the simple cross-tabulation analysis proved that cumulative satisfaction of visitors proved has less impactful in willingness to revisit the place later, which had disputed the theory that mentioned by Johnson, et al. [12] The issue might need further supplementary studies due to some limitation occurred in this study, for instance, the number of adequate respondents, the range of background of targeted respondents, or other significance points, such as interesting attractions nearby Kali Besar corridor.

In conclusion, the visitor’s opinion reveals that the walkability aspect among the area is regarded as acceptable, and our observation verified the decent connectivity and accessibility nearby the Kali Besar corridors, but still, some improvement needs to be done. It is also possible to enhance the livability of the TOD area, by way of tourism activities, which also mentioned in Renne and Listokin [15]. Therefore, further research should be conducted to understand the characteristic visitors and the possibility to develop the area not only as a heritage transit-oriented area with some unoccupied buildings but also possible future mixed neighborhoods to accommodate mixed-use typologies. Additionally, the impact of tourism activity in supporting the TOD area might be useful in the future planning of nearby heritage area.

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